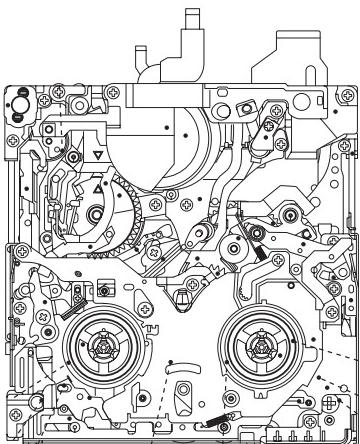


JVC

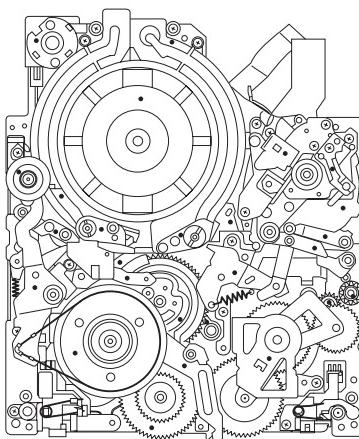
SERVICE MANUAL

MECHANISM ASSEMBLY

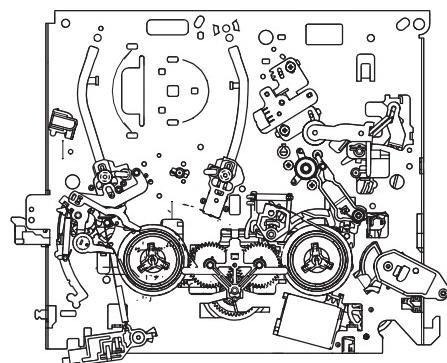
DVC MECHANISM VHS-C MECHANISM VHS MECHANISM



<DVC MECHANISM>



<VHS-C MECHANISM>



<VHS MECHANISM>

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2 SPECIFIC SERVICE INSTRUCTIONS	2-1
3 PARTS LIST	3-1

SECTION 1

JIGS AND TOOLS

1.1 TOOLS REQUIRED FOR ADJUSTMENTS

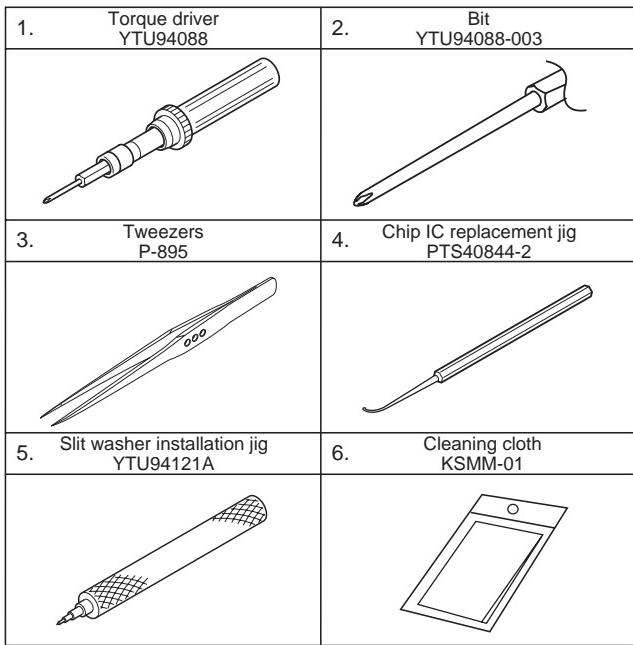


Fig.1-1-1

1. Torque driver

Be sure to use to fastening the mechanism and exterior parts because those parts must strictly be controlled for tightening torque.

Torque setting value of torque driver is limited. At the values over the maximum torque setting value, fasten a screw manually not to damage the screw thread.

2. Bit

This bit is slightly longer than those set in conventional torque drivers.

3. Tweezers

To be used for removing and installing parts and wires.

4. Chip IC replacement jig

To be used for replacement of part.

5. Slit washer installation jig

To be used to install slit washers.

6. Cleaning cloth

Recommended cleaning cloth to wipe down the video heads, mechanism (tape transport system), optical lens surface.

SECTION 2

SPECIFIC SERVICE INSTRUCTIONS

2.1 DVC MECHANISM

2.1.1 Precautions

- (1) When fastening parts, pay careful attention to the tightening torque of each screw. Unless otherwise specified, tighten a screw with the torque of 0.055 N•m (0.56 kgf•cm).
- (2) Be sure to disconnect the set from the power supply before fastening and soldering parts.
- (3) When disconnecting/connecting wires, be careful not to get them and their connectors damaged.
- (4) When replacing parts, be very careful neither to damage other parts nor to fit wrong parts by mistake.

2.1.2 Notes on procedure for disassembly/assembly

The disassembling procedure table (Fig. 2-1-10 on page 2-4,a part of the table is shown below for reference) shows the procedure to disassemble/reassemble mechanism parts.

Carefully read the following explanation before starting actual disassembling/reassembling work. The item numbers(circled numbers)in the following explanation correspond to those appearing under respective columns of the table.

Example

NO.	PART NAME	FIG.	POINT	NOTE	REMARKS
[1]	CASSETTE HOUSING ASSY	T	Fig.2-4-3 3(S1),(L1a)-(L1e)	NOTE 1 a,b,c,d	ADJUSTMENT
[2]	UPPER BASE ASSY	T	Fig.2-4-4 (S2),(L2a),(L2b)	NOTE 2	
[3]	DRUM ASSY	T	(S3a),2(S3b)	NOTE 3 a,b	
[4]	REEL DISK ASSY(SUP)	T	Fig.2-4-5 (W4)	NOTE 4 a	
[5]	REEL DISK ASSY(TU)	T	(W5a),(W5b),(W5c)	NOTE 5 a,b	
[6]	REEL COVER ASSY	T	(W6),(S6a),2(S6b)	NOTE 6	ADJUSTMENT

*1 Numbers appearing in this column indicate the order to remove parts. When reassembling, follow these numbers in the reverse order. Circled numbers in this column correspond to those appearing in drawings of this section.

*2 This column shows part names corresponding to numbers in the left column.

*3 The symbol (T or B)appearing in this column shows the side which the objective part is mounted on.
T =the upper side, B =the lower side

*4 Symbols appearing in this column indicate drawing numbers.

*5 This column indicates parts and points such as screws, washers,springs, and others to be removed/fitted for disassembling/reassembling the mechanism. Besides such the parts, this column occasionally indicates working points.

P = Spring

W = Washer

S = Screw

* = Lock (L),soldering (SD),shield,connector (CN),etc.

Example

- Remove (W1)=Washer W1.
- Remove the solder at (SD1)=Point SD1.
- Disconnect A = Connector A.

*6 Numbers in this column represent the numbers of notes in the text.

(For parts that need phase adjustment after reassembling, refer to "MECHANISM ADJUSTMENTS".)

*7 This column indicates required after-disassembling/-reassembling work such as phase adjustment or mechanism adjustment.

2.1.3 DISASSEMBLY AND ASSEMBLY OF MECHANISM ASSEMBLY

2.1.3.1 General statement

The mechanism should generally be disassembled/assembled in the C.IN mode (ASSEMBLY mode). (Refer to Fig. 2-1-1,2-1-2.) However, when the mechanism is removed from the main body, it is set in the STOP mode. Therefore, after the mechanism is removed from the main body, supply 3 V DC to the electrode on the top of the loading motor to enter the mechanism mode into the C IN mode compulsory.

<Mechanism assembly/Cassette housing assembly>

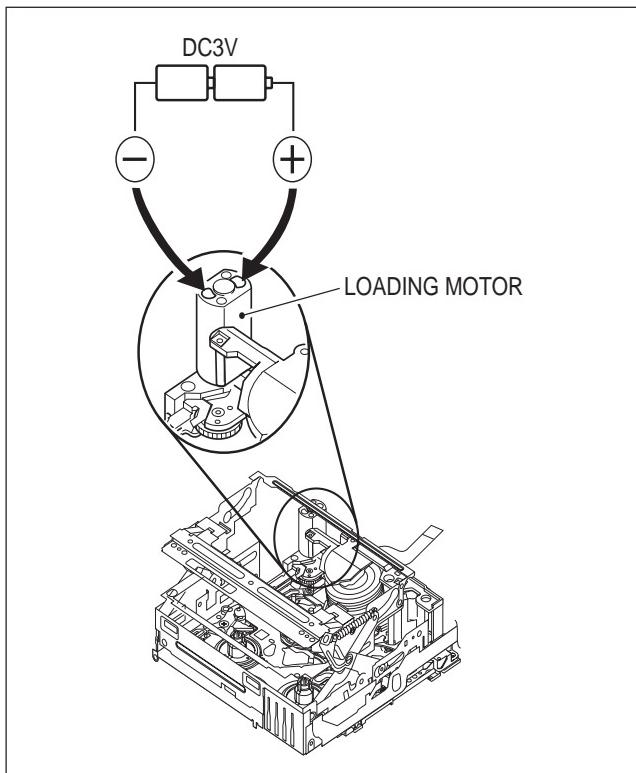


Fig.2-1-1

<Back side of the mechanism assembly>

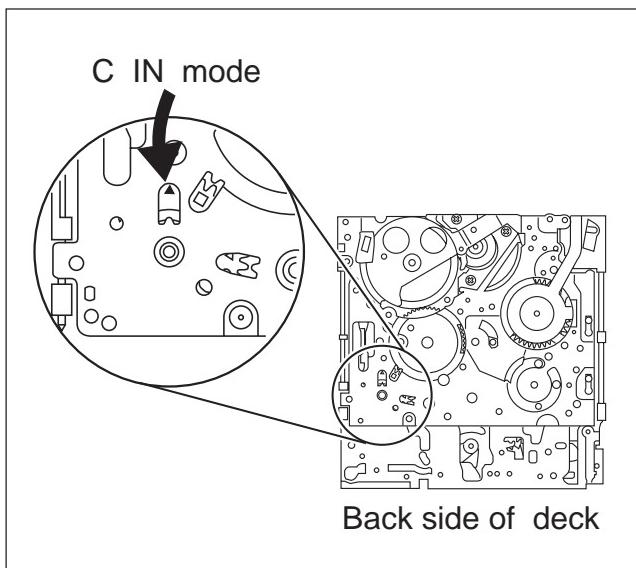


Fig.2-1-2

2.1.3.2 Explanation of mechanism mode

The mechanism mode of this model is classified into five modes as shown in Fig. 2-1-9. Each mechanism mode can be distinguished from others by the relative position of “△”, “○”, “○”, “□” marks on the sub cam gear to the inner or outer protrusion on the main deck.

Refer to Fig. 2-1-3 to 2-1-8 below.

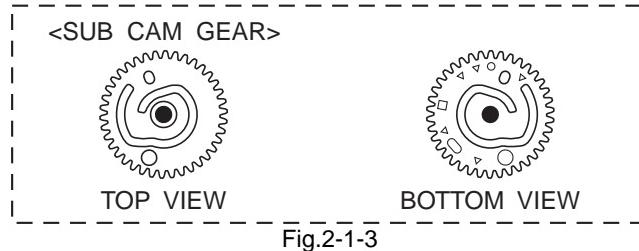


Fig.2-1-3

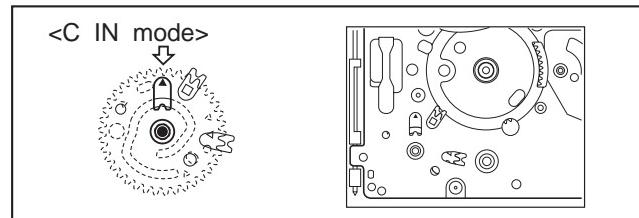


Fig.2-1-4

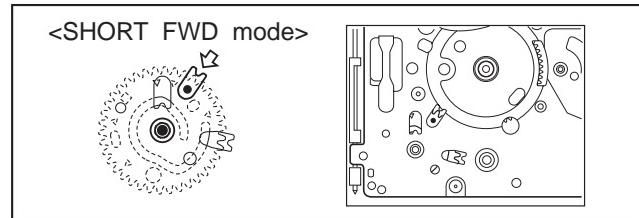


Fig.2-1-5

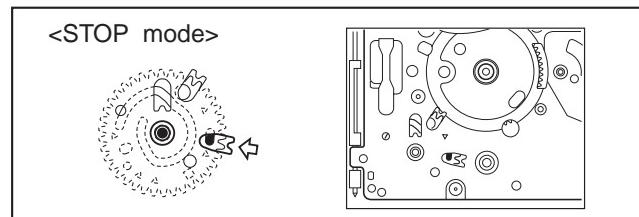


Fig.2-1-6

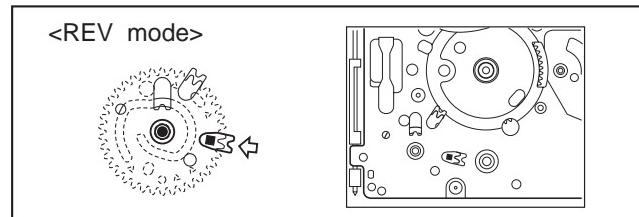


Fig.2-1-7

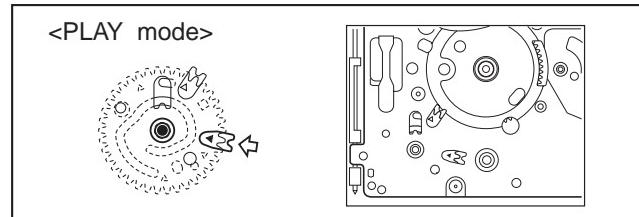


Fig.2-1-8

2.1.3.3 Mechanism timing chart

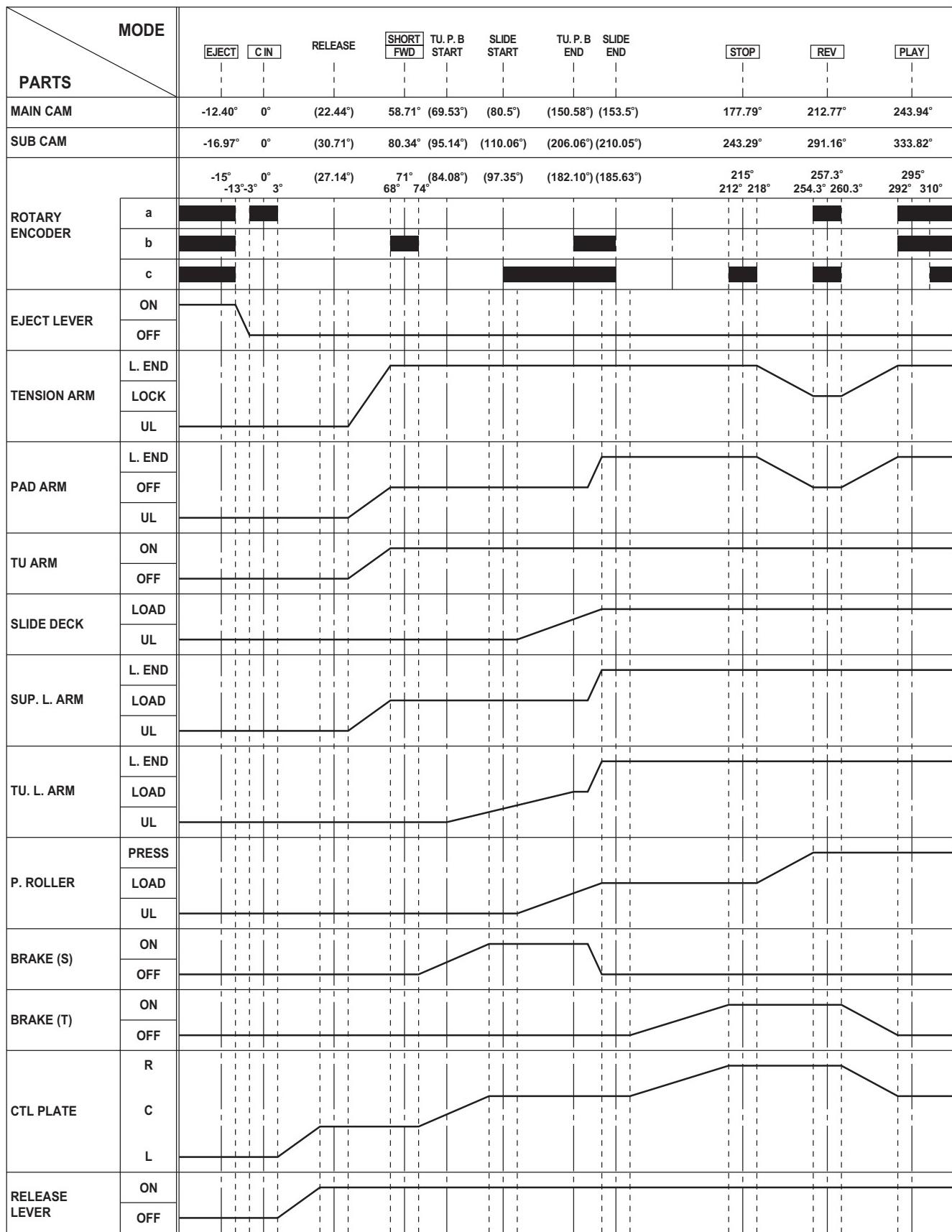


Fig.2-1-9

2.1.4 DISASSEMBLY PROCEDURE TABLE

MARK: # After assembly, perform adjustments.

NO.	PART NAME		FIG.	POINT	NOTE	REMARKS
[1]	CASSETTE HOUSING ASSY	T	Fig.2-1-14	3(S1),(L1a)-(L1e)	NOTE 1 a,b,c,d	ADJUSTMENT
[2]	UPPER BASE ASSY	T	Fig.2-1-15	(S2),(L2a),(L2b)	NOTE 2	
[3]	DRUM ASSY	T		(S3a),2(S3b)	NOTE 3 a,b	ADJUSTMENT
[4]	REEL DISK ASSY(SUP)	T	Fig.2-1-16	(W4)	NOTE 4	
[5]	REEL DISK ASSY(TU)	T		(W5a),(W5b)	NOTE 5 a,b	
[6]	REEL COVER ASSY	T		(W6),2(S6a),(S6b)	NOTE 6	
[7]	TENSION ARM ASSY	T	Fig.2-1-17	(L7)	NOTE 7	ADJUSTMENT / #
[8]	SLANT POLE ARM ASSY	T		(P8)	NOTE 8	ADJUSTMENT
[9]	TU ARM ASSY	T		(L9)	NOTE 9	ADJUSTMENT
[10]	SWING ARM ASSY	T		(S10)	NOTE 10	ADJUSTMENT
[11]	SLIDE DECK ASSY	T	Fig.2-1-18	2(S11a),(S11b),2(L11a), 2(L11b),(L11c)	NOTE 11a,b	ADJUSTMENT / #
[12]	PAD ARM ASSY	T	Fig.2-1-19	(P12),(L12),(W12)	NOTE 12	ADJUSTMENT / #
[13]	-	-		-	-	
[14]	TU BRAKE ASSY	T		(P14),(L14),(W14)	NOTE 14	ADJUSTMENT
[15]	TENSION CTL LEVER ASSY	T	Fig.2-1-20	(W15)	NOTE 15	ADJUSTMENT
[16]	CENTER GEAR	T		-	NOTE 16	
[17]	PINCH ROLLER ARM F. ASSY	T		(W17)	NOTE 17	ADJUSTMENT
[18]	TENSION CTL PLATE ASSY	T		-	NOTE 18	ADJUSTMENT
[19]	BRAKE CTL LEVER ASSY	T		-	NOTE 19	ADJUSTMENT
[20]	MOTOR BRACKET ASSY	T	Fig.2-1-21	3(S20),(L20a),2(L20b)	NOTE 20	ADJUSTMENT
[21]	GUIDE RAIL ASSY	T		2(W21),(S21),2(L21a),(L21b)	NOTE 21	ADJUSTMENT
[22]	SLIDE LEVER 2 ASSY	T		-	NOTE 22	ADJUSTMENT / #
[23]	LOADING PLATE ASSY	T		(W23)	NOTE 23	ADJUSTMENT
[24]	MODE GEAR	T		-	NOTE 24	
[25]	EJECT LEVER	T		(W25)	NOTE 25	ADJUSTMENT
[26]	BASE R ASSY	T	Fig.2-1-22	(S26a),(S26b),2(L26)	NOTE 26	ADJUSTMENT
[27]	ROTARY ENCODER	T		2(S27)	NOTE 27	PHASE ADJUSTMENT
[28]	GEAR COVER ASSY	T		(S28a),2(S28b)	-	
[29]	MAIN CAM ASSY	T		-	NOTE 29	PHASE ADJUSTMENT
[30]	SLIDE ARM ASSY	T	Fig.2-1-23	-	NOTE 30	ADJUSTMENT
[31]	CONNECT GEAR 2	T		-	NOTE 31	
[32]	SUB CAM ASSY	T		(S32)	NOTE 32	PHASE ADJUSTMENT
[33]	CONTROL ARM ASSY	T		-	NOTE 33	ADJUSTMENT
[34]	REEL GEAR 1	T		-	NOTE 34	
[35] / [36]	DRUM BASE ASSY/ CAPSTAN MOTOR	T	Fig.2-1-24	3(S35)	NOTE 35a,b	ADJUSTMENT
[36]	CAPSTAN MOTOR	T		(S36)	NOTE 36	ADJUSTMENT
[37]	MAIN DECK ASSY	T		-	-	

Fig.2-1-10

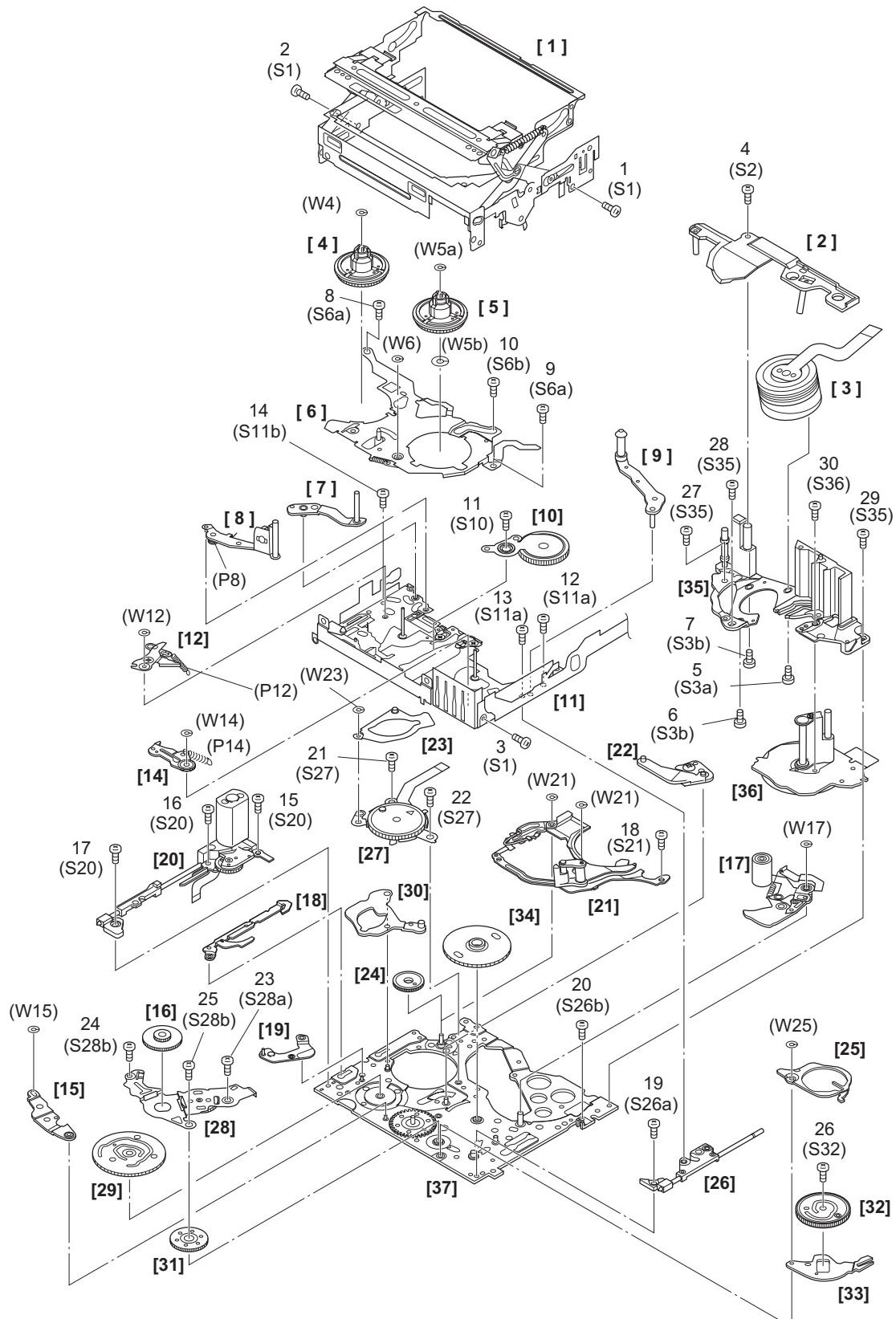


Fig.2-1-11

< TOP VIEW >

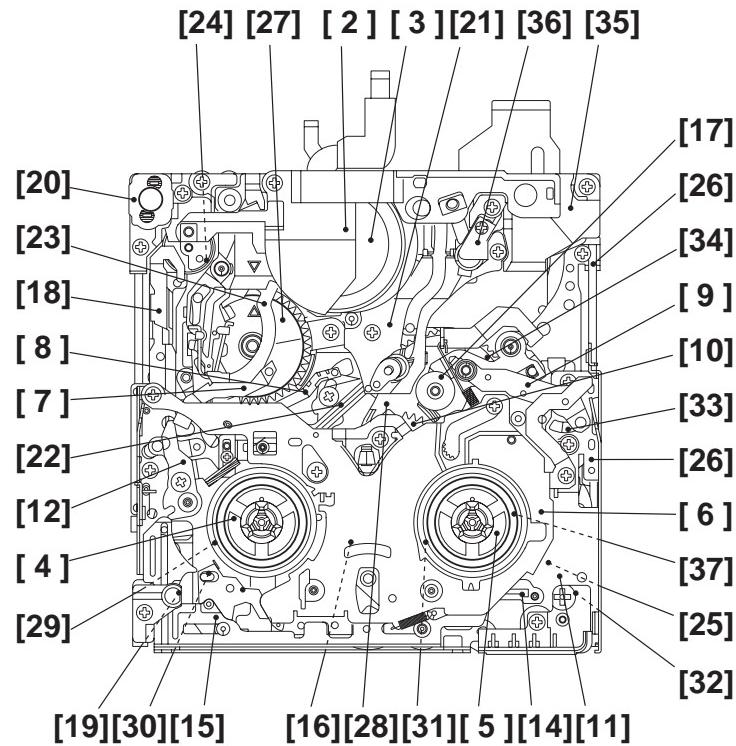


Fig.2-1-12

< BOTTOM VIEW >

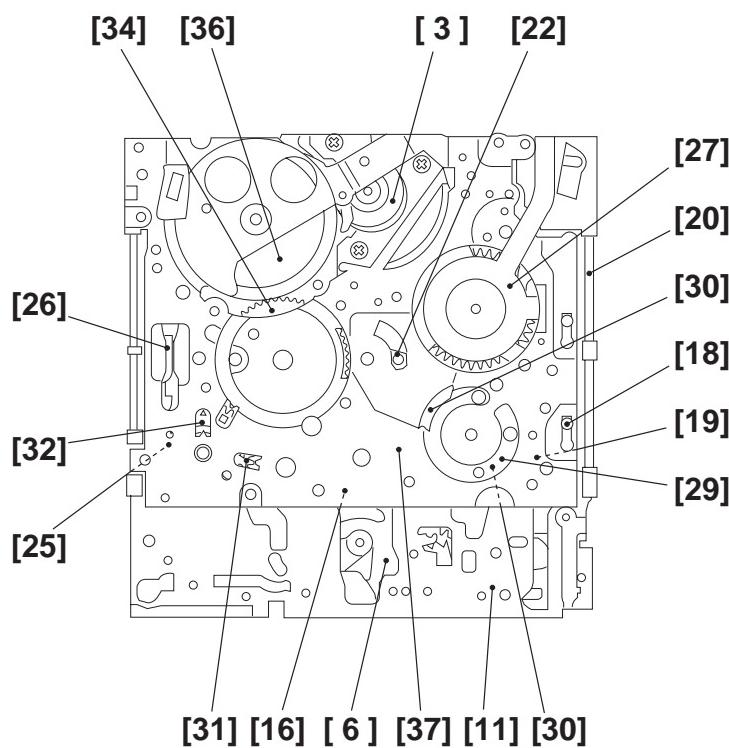


Fig.2-1-13

2.1.5 DISASSEMBLY/ASSEMBLY

2.1.5.1 [1] CASSETTE HOUSING ASSY

NOTE 1a:

Be careful not to damage any of the parts during work.

NOTE 1b:

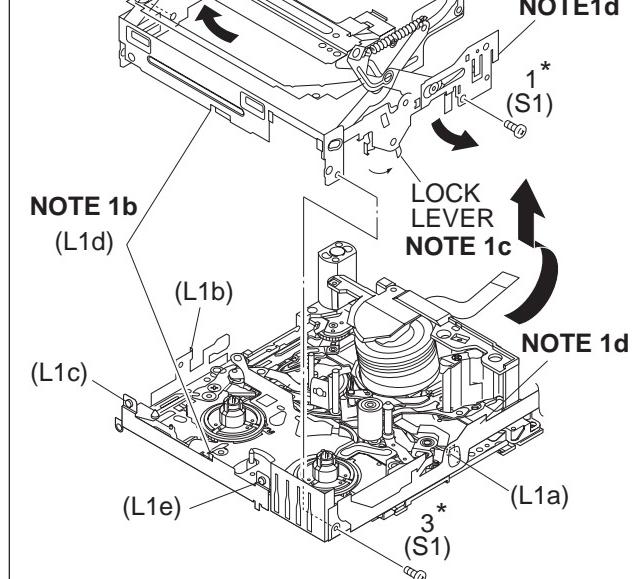
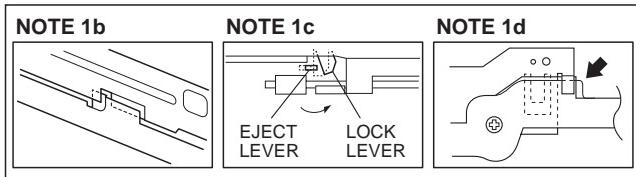
Special care is required in mounting.

NOTE 1c:

When mounting, the CASSETTE HOUSING ASSY should be attached in the Eject status. Pay heed to the positions of the LOCK LEVER and EJECT LEVER during mounting.

NOTE 1d:

When mounting, be sure to locate the FPC in the gap.



* 0.069 N·m (0.7 kgf·cm)

Fig.2-1-14

2.1.5.2 [2] UPPER BASE ASSY

[3] DRUM ASSY

NOTE 2:

When mounting, be sure to insert the FPC reinforcing sheet.

NOTE 3a:

Be mindful of scratches or damage during work.

NOTE 3b:

Be careful not to attach screws incorrectly.

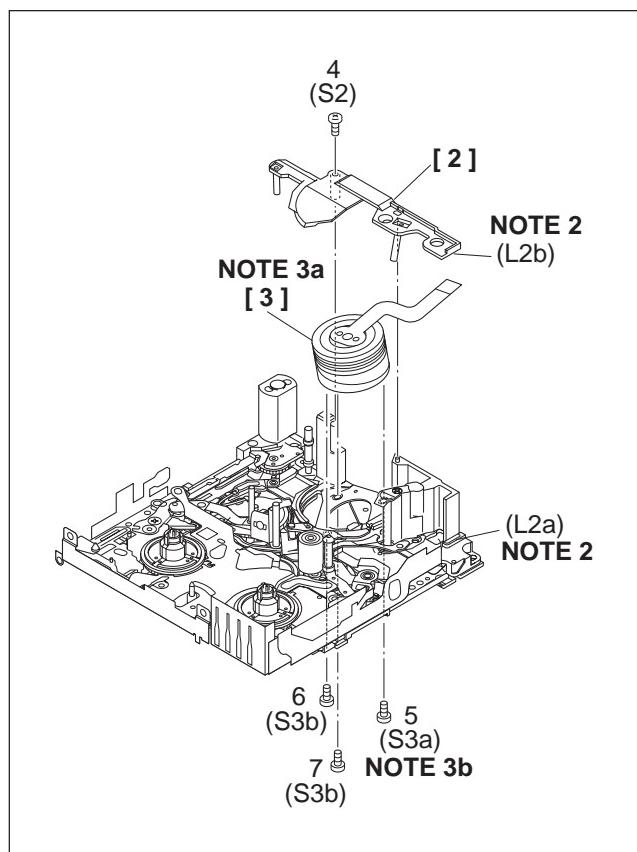
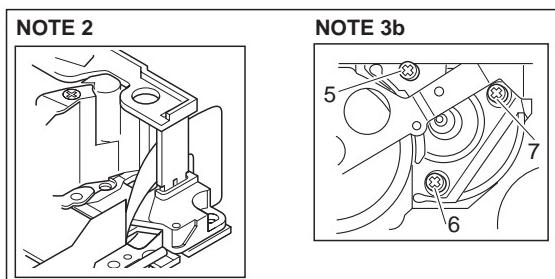


Fig.2-1-15

**2.1.5.3 [4] REEL DISK ASSY(SUP)
[5] REEL DISK ASSY(TU)
[6] REEL COVER ASSY**

NOTE 4:

Be careful not to attach the REEL DISK wrongly. The Supply side can be identified by the white color at the center.

NOTE 5a:

Be careful not to attach the REEL DISK wrongly. The Take-up side can be identified by the black color at the center.

NOTE 5b

The washer is inserted under the REEL DISK.

Be carefull not to lose the washer.

Two washers are inserted under the REEL DISK in some products manufactured earlier, but one washer is inserted in the products manufactured recently and in the future.

See the parts list, and use the parts written in the parts list.

NOTE 6:

Perform the following steps for mounting.

- (1) Align the hole with the pin.
- (2) Attach the [17] PINCH ROLLER ARM FINAL ASSY by aligning the positions.
- (3) Attach the SLIDE DECK ASSY (POINT[A]) by aligning the positions.
- (4) Check that the parts below them are located in the correct positions.
- (5) Tighten the 2 screws.
- (6) Tighten the screw.
- (7) Attach the 1 SLIT WASHER parts.

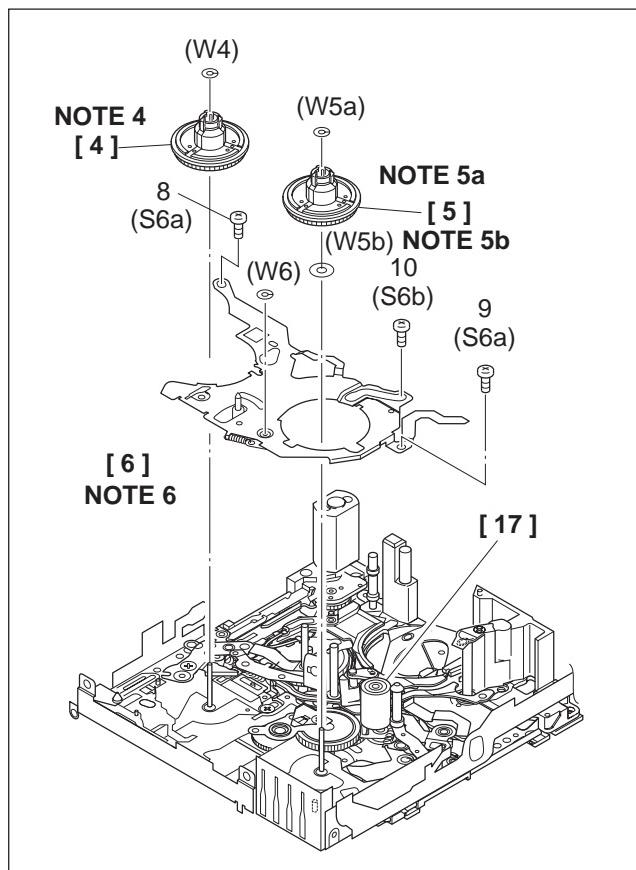
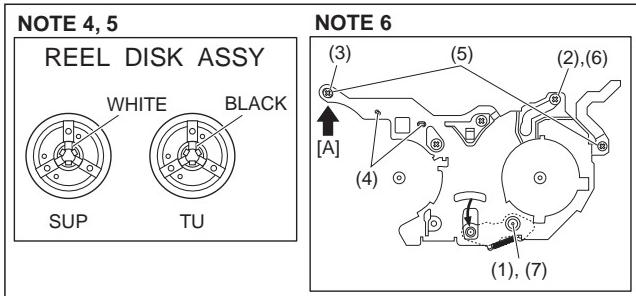


Fig.2-1-16

- 2.1.5.4 [7] TENSION ARM ASSY
- [8] SLANT POLE ARM ASSY
- [9] TU ARM ASSY
- [10] SWING ARM ASSY

NOTE 7:

When detaching, remove the spring of the [12] PAD ARM ASSY in advance.

Pay attention to the attachment position.

NOTE 8:

When mounting the SLANT POLE ARM ASSY, hook the spring onto the lug as in diagram A, and fit the combination onto the SLIDE DECK ASSY. After fitting, hook the spring onto the lug of the SLIDE DECK ASSY as in diagram B.

Be careful not to lose the spring.

NOTE 9:

Pay attention to the attachment position.

NOTE 10:

When detaching, remove the screw then remove the SWING ARM ASSY by pulling it up and turning it.

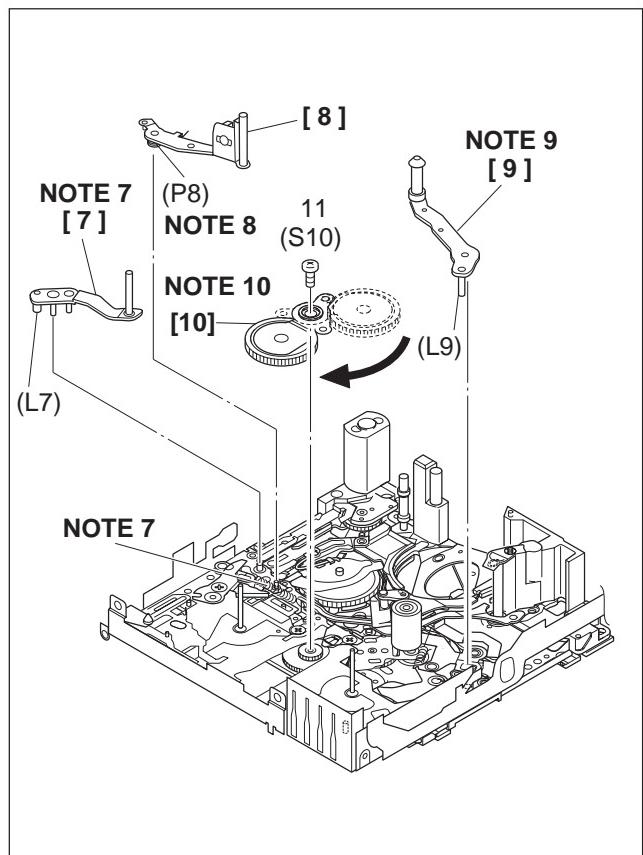
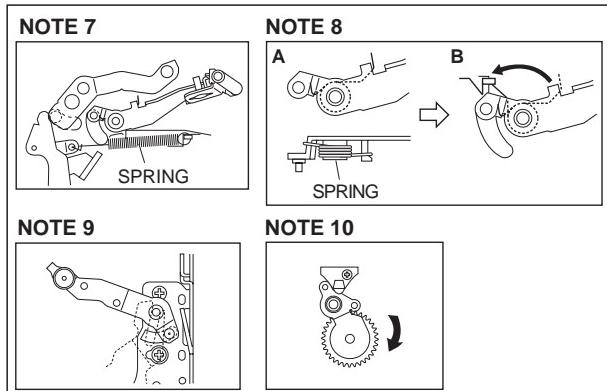


Fig.2-1-17

2.1.5.5 [11] SLIDE DECK ASSY

NOTE 11a:

Each of the parts on the SLIDE DECK ASSY can be replaced separately.

When detaching the assembly, if there is no need to replace any of its parts, remove the SLIDE DECK ASSY as it is.

NOTE 11b:

When mounting, pay attention to the positions of the [22] SLIDE LEVER 2 ASSY studs and the [19] BRAKE CTL LEVER ASSY.

When mounting, position the CONTROL PLATE on the left side.

Pay attention to the position of the SLIDE GUIDE PLATE during mounting.

NOTE 11b

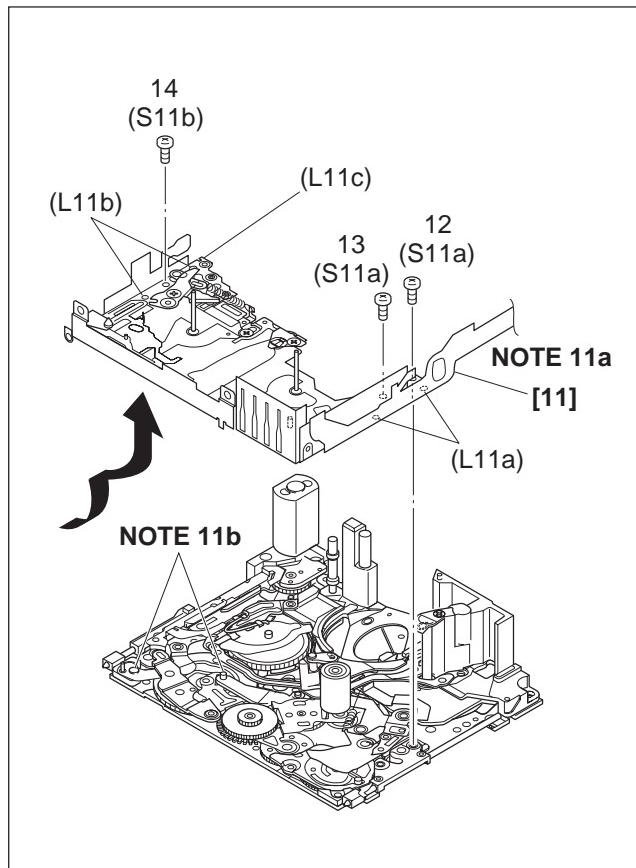
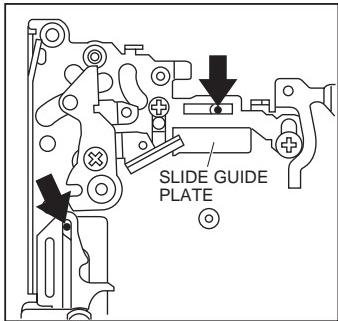


Fig.2-1-18

2.1.5.6 [12] PAD ARM ASSY

[13] -

[14] TU BRAKE ASSY

NOTE 12:

The spring may have already been disengaged when the [8] SLANT POLE ARM ASSY was removed.

NOTES 14:

When mounting, pay attention to the correct positioning.

Mount the CONTROL PLATE by moving it fully toward the left side.

NOTE 12,14

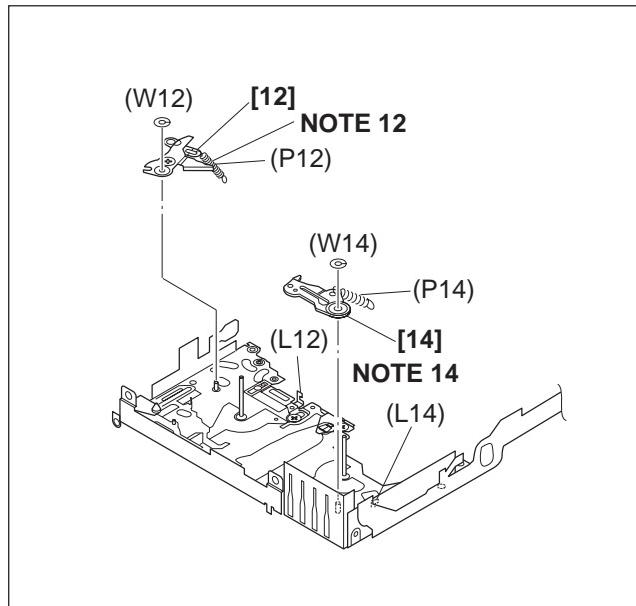
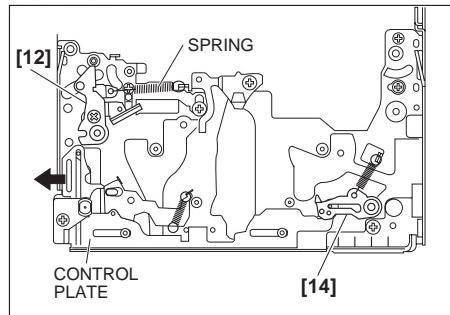


Fig.2-1-19

- 2.1.5.7** [15] TENSION CTL LEVER ASSY
 [16] CENTER GEAR
 [17] PINCH ROLLER ARM FINAL ASSY
 [18] TENSION CTL PLATE ASSY
 [19] BRAKE CTL LEVER ASSY

NOTES 15/16:

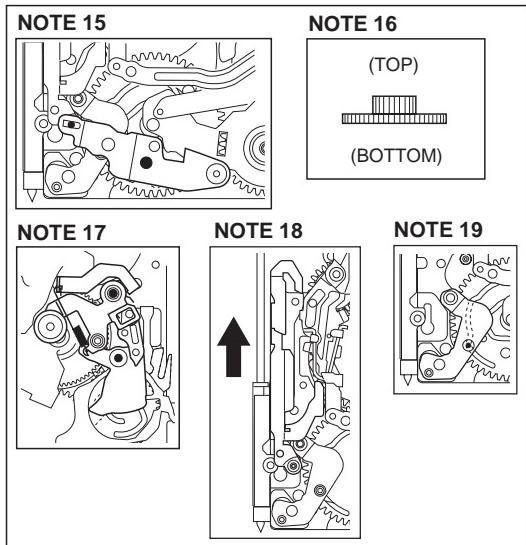
When mounting, pay attention to the correct positioning.

NOTE 17:

Take care against grease attachment during work.

NOTES 18/19:

When mounting, pay attention to the correct positioning.



- 2.1.5.8** [20] MOTOR BRACKET ASSY
 [21] GUIDE RAIL ASSY
 [22] SLIDE LEVER 2 ASSY
 [23] LOADING PLATE ASSY
 [24] MODE GEAR
 [25] EJECT LEVER

NOTE 20:

When mounting, pay attention to the positioning of the sliding parts.

NOTE 21:

When mounting, take care that no part is allowed to float or rattle.

NOTES 22/23/24/25:

When mounting, pay attention to the correct positioning.

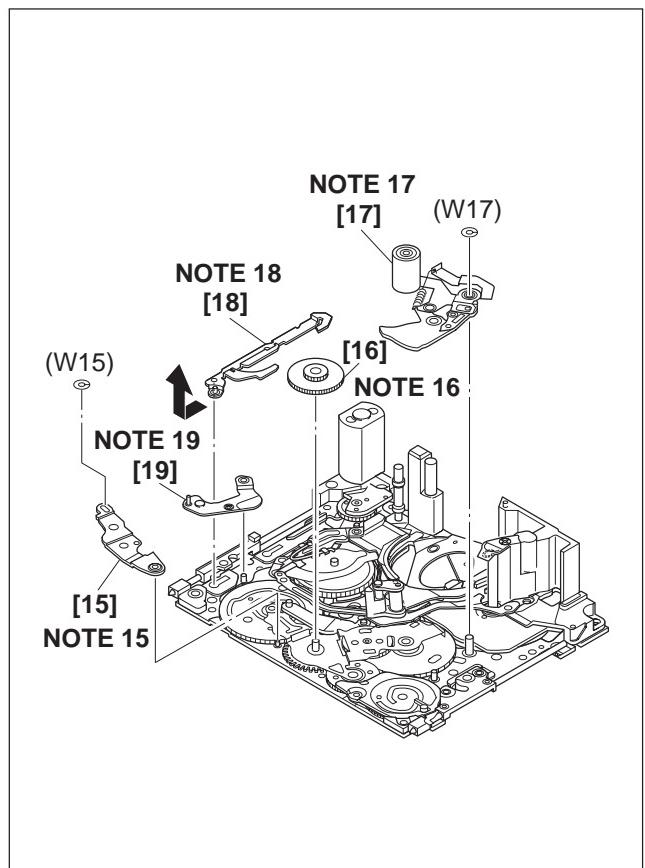
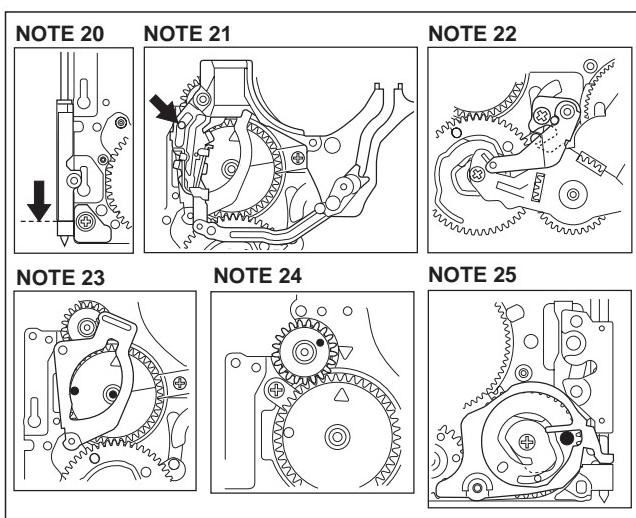


Fig.2-1-20

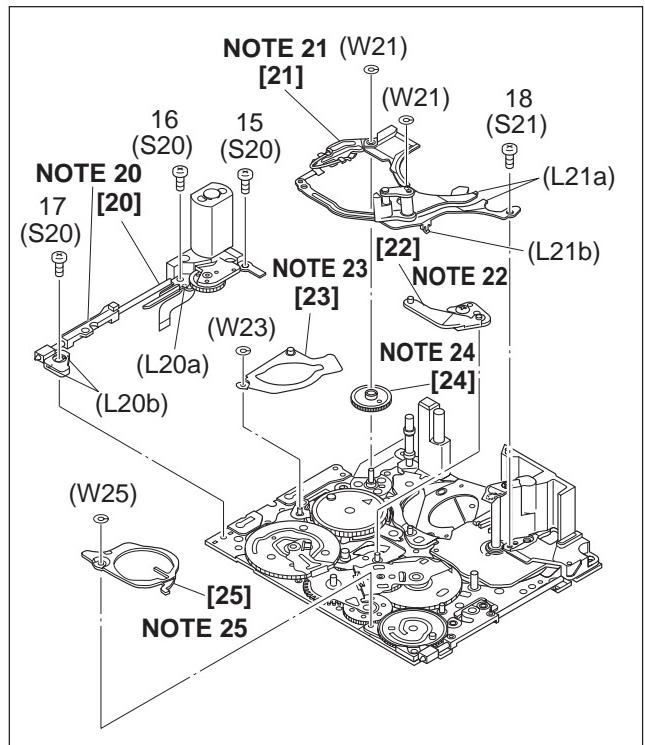


Fig.2-1-21

- 2.1.5.9** [26] BASE R ASSY
 [27] ROTARY ENCODER
 [28] GEAR COVER ASSY
 [29] MAIN CAM ASSY

NOTE 26:

When mounting, fold the sliding part to the inner side.

NOTE 27:

When mounting, pay attention to the correct positioning and the FPC layout.

NOTE 29:

When mounting, pay attention to the correct positioning.

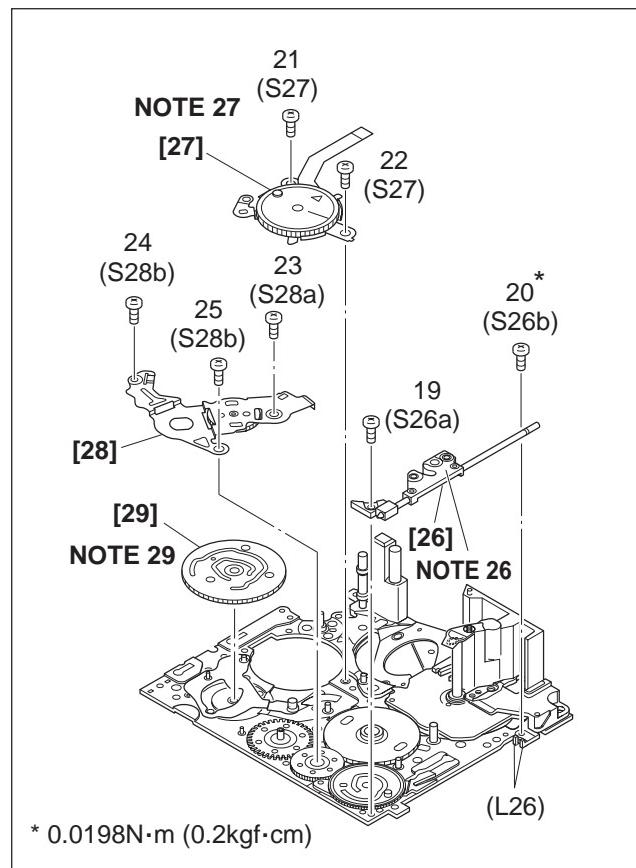
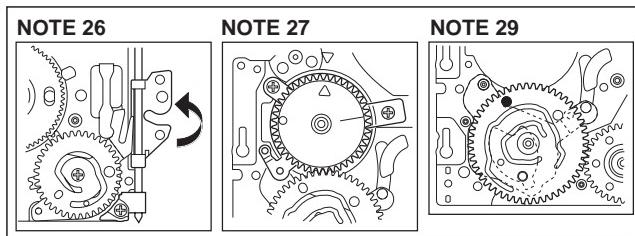


Fig.2-1-22

- 2.1.5.10** [30] SLIDE ARM ASSY
 [31] CONNECT GEAR 2
 [32] SUB CAM ASSY
 [33] CONTROL ARM ASSY
 [34] REEL GEAR 1

NOTE 30:

When mounting, pay attention to the correct positioning.

NOTE 31:

When mounting, pay attention to the position of the front and back.

NOTES 32/33/34:

When mounting, pay attention to the correct positioning.

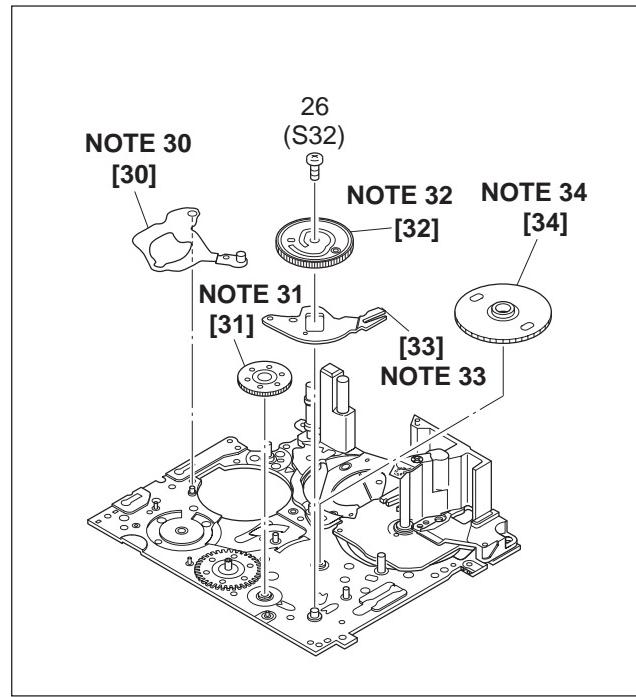
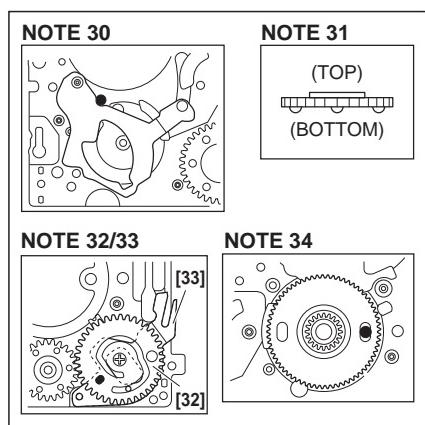


Fig.2-1-23

2.1.5.11 [35] DRUM BASE ASSY

[36] CAPSTAN MOTOR

[37] MAIN DECK ASSY

NOTES 35a/36:

Since [36]CAPSTAN MOTOR is attached to [35]DRUM BASE ASSY, remove [36]CAPSTAN MOTOR together with [35]DRUM BASE ASSY when removing [36]CAPSTAN MOTOR.

[36]CAPSTAN MOTOR should not be separated from [35]DRUM BASE ASSY except when replacing them.

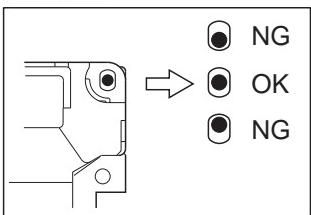
NOTE 35b:

It is very important to attach [35]DRUM BASE ASSY to the proper position.

Especially, improper engagement of [36]CAPSTAN MOTOR with [34]REEL GEAR 1 causes operational defect or abnormal sound. Therefore, confirm the attachment position before disassembly procedure.

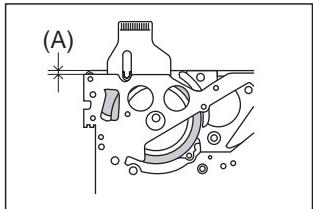
See the following figure as for the proper attachment position.

NOTE 35b



When [35]DRUM BASE ASSY is properly attached, the screw hole tends to be located at the center of the oval.

When the screw hole is located far from the center of the oval, operational defect or abnormal sound may occur.



Before removing [35]DRUM BASE ASSY, confirm the position of [35]DRUM BASE ASSY by seeing the length (A), as shown in the left figure.

When reattaching [35]DRUM BASE ASSY, confirm the position to reattach [35]DRUM BASE ASSY by seeing the length (A). Be sure to reattach [35]DRUM BASE ASSY to the same position as it has been before the removing procedure.

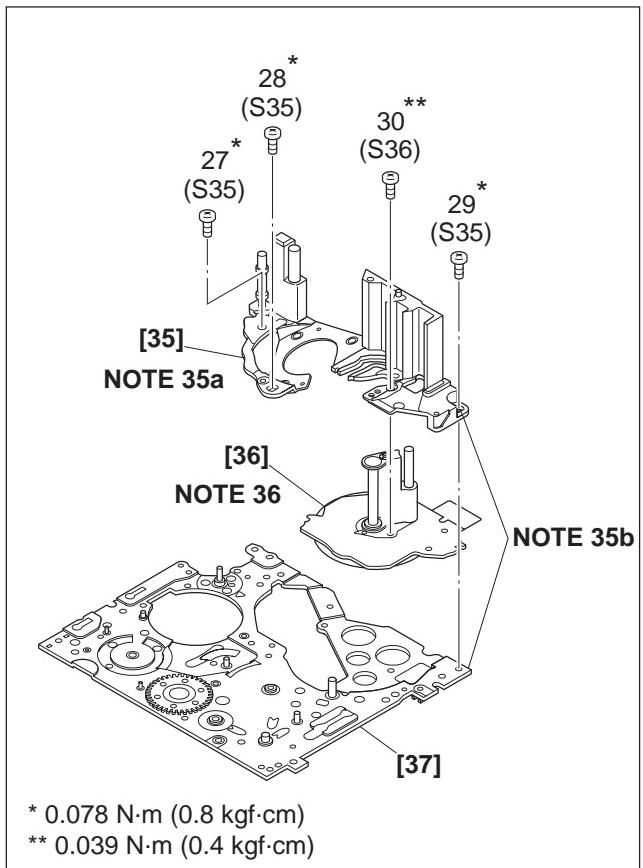


Fig.2-1-24

2.1.6 CHECKUP AND ADJUSTMENT OF MECHANISM PHASE

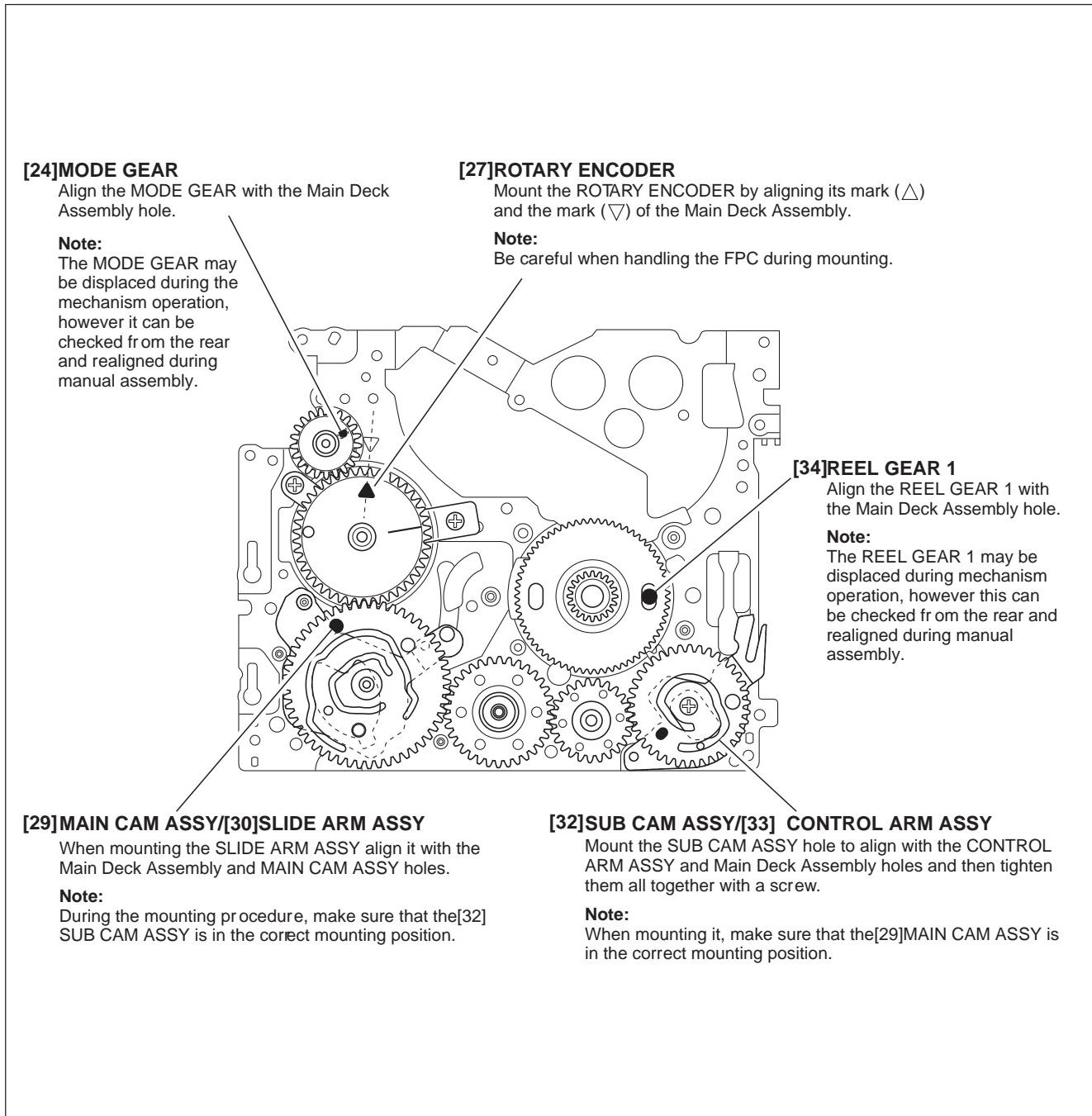


Fig.2-1-25

2.1.7 MECHANISM ADJUSTMENTS

2.1.7.1 Adjustment of the slide guide plate

Use Fig. 2-1-26 as the reference unless otherwise specified.

- (1) Set the PLAY mode. See Fig. 2-1-8.
- (2) Loosen the screws (**A**, **B**).
- (3) With the Main Deck and Slide Deck Assemblies pushed into the unit, tighten the screws (**A**, **B**) while applying pressure to the stud (shaft) on the Slide Guide plate.
The pressure applied should be enough to enable utilization of the rebounding force of the springs.
The tightening torque should be 0.069 N·m (0.7 kgf·cm).
- (4) Check the operation.
Repeat unloading and loading several times and make sure that these operations can be performed smoothly without producing rattles.

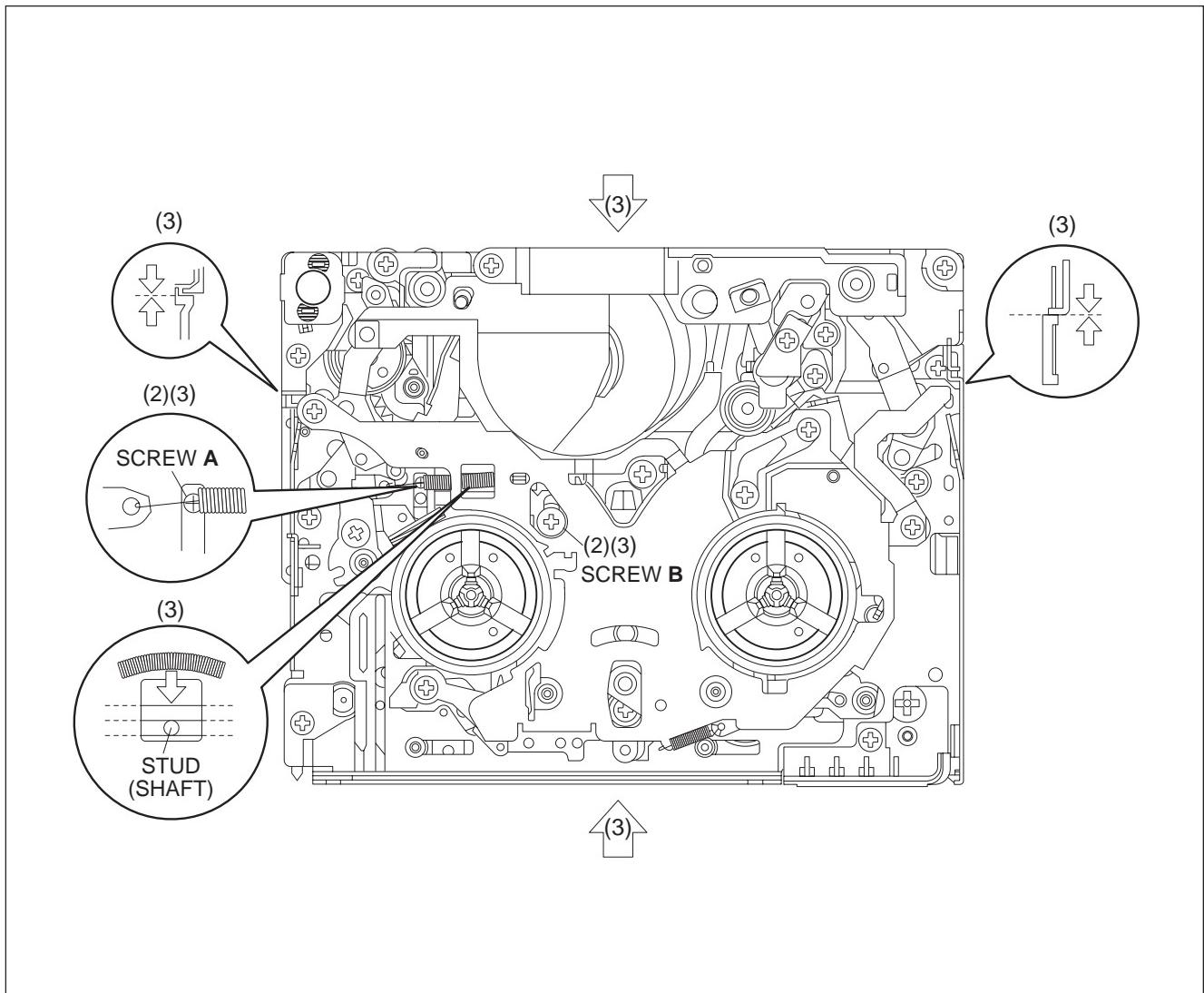


Fig.2-1-26

2.1.7.2 Adjustment of the Tension Arm and Pad Arm Assemblies

Use Fig. 2-1-27 as the reference unless otherwise specified.

- (1) Set the PLAY mode.

See Fig. 2-1-8.

- (2) Loosen the screw **A**.

(3) With the take-up side at the bottom, align the extreme end of the Tension Arm Assembly with the crossed grooves on the screw **B** that retains the Loading Motor Assembly and then tighten the screw **A**.

The tightening torque should be 0.069 N·m (0.7 kgf·cm).

- (4) Check the operation.

Repeat unloading and loading several times and make sure that the Tension Arm Assembly is located within the normal range.

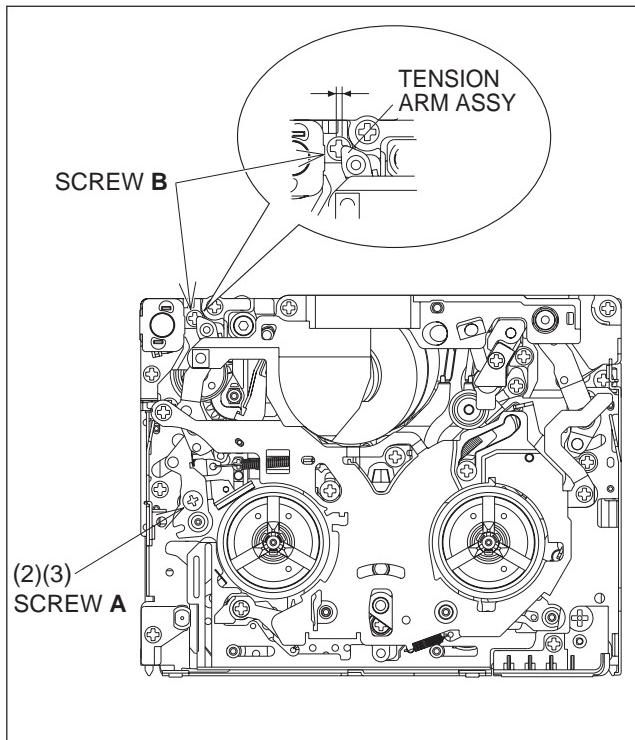


Fig.2-1-27

2.1.7.3 Adjustment of the Slide Lever 2

Use Fig. 2-1-28 as the reference unless otherwise specified.

- (1) Set the C IN mode.

See Fig. 2-1-4.

- (2) Loosen the screw **A**.

(3) Set the Main Deck and Slide Deck Assemblies apart so that they do not rattle, then tighten the screw **A** by screwing it fully toward the Drum Assembly.

The tightening torque should be 0.069 N·m (0.7 kgf·cm).

- (4) Check the operation.

Repeat unloading and loading several times and make sure that these operations can be performed smoothly without producing rattles.

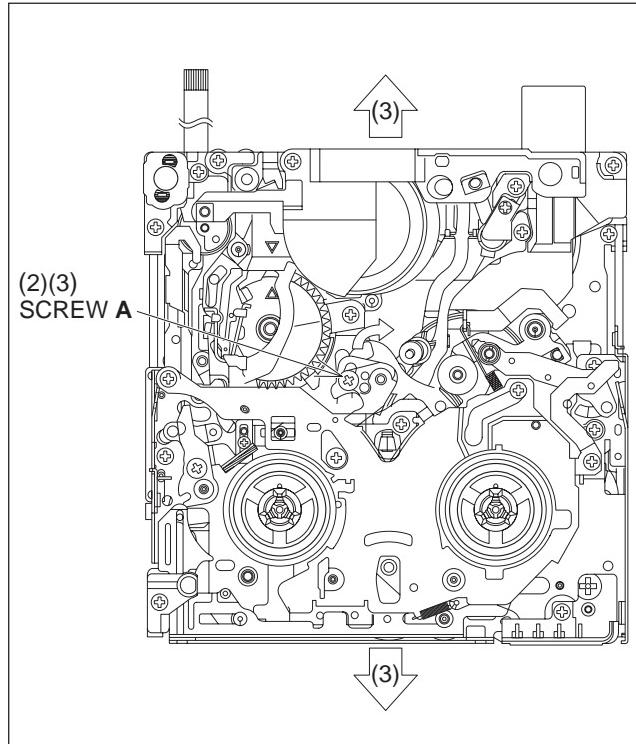


Fig.2-1-28

2.1.8 SERVICE NOTE

Use the following chart to manage mechanism parts that are removed for disassembling the mechanism.

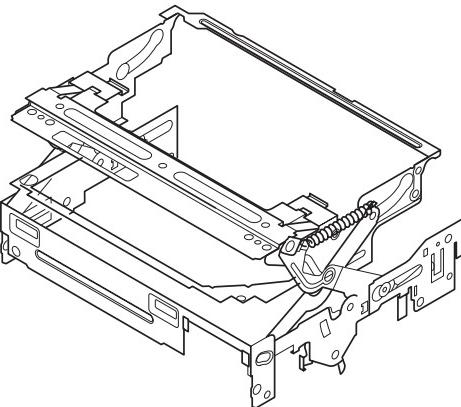
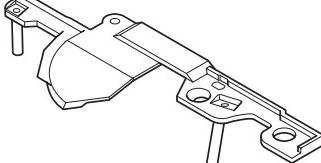
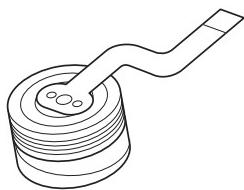
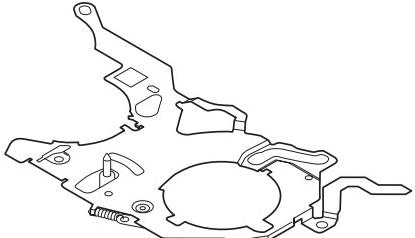
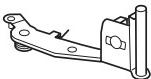
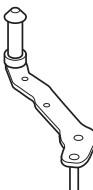
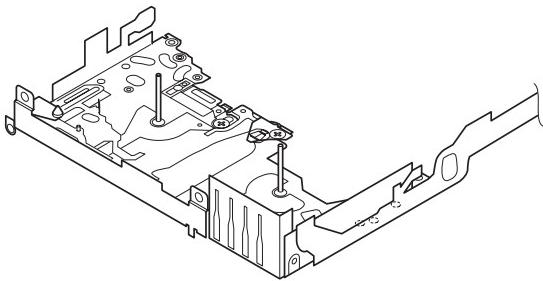
 Fig.2-1-14	[1] CASSETTE HOUSING ASSY	 Fig.2-1-15		
 Fig.2-1-15	[3] DRUM ASSY	[4] REEL DISK ASSY(SUP)  [5] REEL DISK ASSY(TU) 	[6] REEL COVER ASSY 	
 Fig.2-1-17	[7] TENSION ARM ASSY	[8] SLANT POLE ARM ASSY 	[9] TU ARM ASSY 	[10] SWING ARM ASSY 
 Fig.2-1-18	[11] SLIDE DECK ASSY	[12] PAD ARM ASSY 	[13] 	[14] TU BRAKE ASSY 

Fig.2-1-29

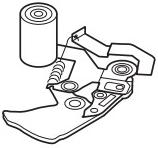
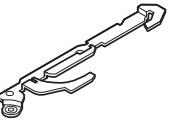
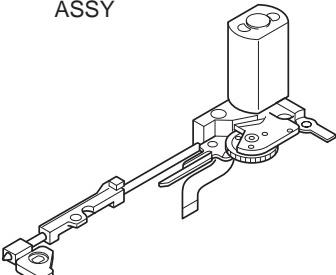
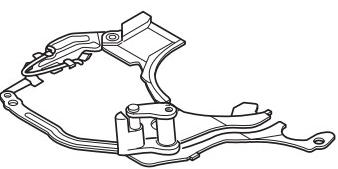
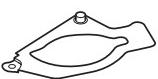
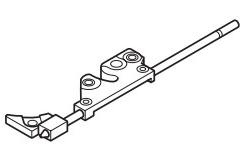
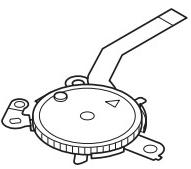
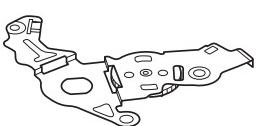
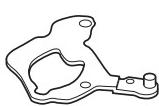
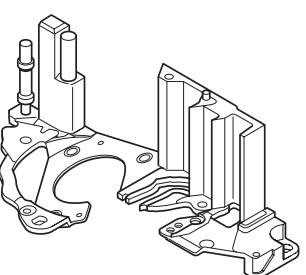
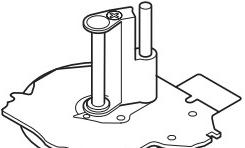
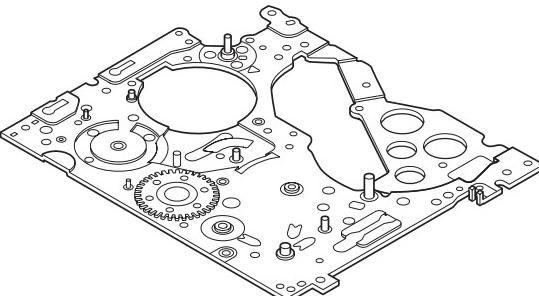
Fig.2-1-20	[15] TENSION CTL LEVER ASSY 	[16] CENTER GEAR 	[17] PINCH ROLLER ARM F. ASSY 	[18] TENSION CTL PLATE ASSY 	[19] BRAKE CTL LEVER ASSY 
Fig.2-1-21	[20] MOTOR BRACKET ASSY 	[21] GUIDE RAIL ASSY 	[22] SLIDE LEVER 2 ASSY 	[23] LOADING PLATE ASSY 	
Fig.2-1-22	[26] BASE R ASSY 	[27] ROTARY ENCODER 	[28] GEAR COVER ASSY 	[29] MAIN CAM ASSY 	
Fig.2-1-23	[30] SLIDE ARM ASSY 	[31] CONNECT GEAR 2 	[32] SUB CAM ASSY 	[33] CONTROL ARM ASSY 	[34] REEL GEAR 1 
Fig.2-1-24	[35] DRUM BASE ASSY 	[36] CAPSTAN MOTOR 	[37] MAIN DECK ASSY 		

Fig.2-1-30

2.1.9 SERVICE NOTE

Use the following chart to manage screws.

Symbol No.	[1]	[2]	[3]	[6]	[10]	[11]	[20]	[21]	[22]
Removing order of screw	1	2	3	4	5	6	7	8	9
Place to stick screw									
Reference drawing (Fig. No.2-1-**)				14					
Screw tightening torque					15				
						16	17	18	21
							II		22
								III	

Symbol No.	[27]	[28]	[32]	[35]	[36]
Removing order of screw	21	22	23	24	25
Place to stick screw					26
Reference drawing (Fig. No.2-1-**)				22	23
Screw tightening torque					24
				IV	V

<NOTE>

•Pay careful attention to tightening torque for each screw.

I	: 0.069N·m(0.7kgf·cm)	II	: 0.055N·m(0.56kgf·cm)
IV	: 0.078N·m(0.8kgf·cm)	V	: 0.039N·m(0.4kgf·cm)

Fig.2-1-31

2.1.10 REMARKS

2.1.10.1 Cleaning

- (1) For cleaning of the upper drum (particularly video heads), use fine-woven cotton cloth with alcohol soaks through. Do not move the cloth but turn the upper drum counterclockwise.

NOTE:

Make sure not to move the cloth in the vertical direction to the video head, since it may cause damage of the video heads.

- (2) For cleaning of parts of the tape transport system except the upper drum, use fine-woven cotton cloth or cotton swab soaked alcohol.
- (3) After cleaning, confirm that the cleaned parts are completely dry before loading the deck with cassette tape.

2.1.10.2 Applying oil and grease

- (1) Periodical oiling and greasing are not required but should be done to new parts when replacing. If oil and grease on the other parts of the other party are old and dirty, wipe them clean and apply new oil or grease.
- (2) For parts and points to apply oil and grease, refer to the exploded view of the 3.1 DVC MECHANISM ASSEMBLY. Fig.2-1-32 specifies oil and grease to be used.
- (3) When oiling, clean the objective parts with alcohol first and apply one or two drop(s) of oil. Too much oiling causes rotary parts to slip because of oil leakage.

Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-JB	AA
Oil	YTU94027	BB
Grease (HANARL)	RX-410R	CC

specifies oil and grease to be used

Fig.2-1-32

2.2 VHS-C MECHANISM

2.2.1 Precautions

- (1) When fastening parts, pay careful attention to the tightening torque of each screw. Unless otherwise specified, tighten a screw with the torque of 0.216 N•m (2.2 kgf•cm).
Torque setting value of torque driver is limited. At the values over the maximum torque setting value, fasten a screw manually not to damage the screw thread.
- (2) Be sure to disconnect the set from the power supply before fastening and soldering parts.
- (3) When disconnecting/connecting wires, be careful not to get them and their connectors damaged.
- (4) When replacing parts, be very careful neither to damage other parts nor to fit wrong parts by mistake.

Example

STEP/LOC. No.	PART NAME	FIG.	REMOVAL		INSTALLATION ADJUSTMENT CONDITION NOTE
				POINT	
[1]	ROLLER BASE ASSEMBLY	T	M1	(S1)	-
[2]	TENSION ARM ASSEMBLY	T	M1	(P1), (W1a)	-
[3]	REEL DISC (SUP)	T	M1	(W1a), (W1b)	-



2.2.2 How to read the disassembly and assembly

*1 Order of steps in Procedure

When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) No. of parts Figures.

*2 Part to Name be removed or installed.

*3 Location of part.

T = The Upper side
B = The Lower side

*4 Fig. No. showing Procedure or Part Location.

M = Mechanism

*5 Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered.

P = Spring

W = Washer

S = Screw

* = Unhook, unlock, release, unplug or unsolder.

Example

- Remove (W1)=Washer W1.
- Remove the solder at (SD1)=Point SD1.
- Disconnect A = Connector A.

*6 Adjustment information for installation.

(+) = Refer to Exploded Views for Lubrication information.

2.2.3 DISASSEMBLY/ASSEMBLY PROCEDURE TABLE

This procedure starts with the condition that the cabinet parts and deck parts. Also, all the following procedures for adjustment and parts replacement should be performed in STOP mode. When reassembling, perform the step(s) in the reverse order.

STEP/LOC. No.	PART NAME	FIG.	REMOVAL		INSTALLATION ADJUSTMENT CONDITION NOTE
				POINT	
[1]	ROLLER BASE ASSY	T	M1	(1)	—
[2]	TENSION ARM ASSY	T	M1	(P1), (W1a)	—
[3]	REEL DISC	T	M1	(W1a), (W1b)	—
[4]	SLANT ARM ASSY	T	M1	(W1a)	—
[5]	CANCEL LEVER ASSY	T	M2	(W2)	—
[6]	EJECT LEVER ASSY	T	M2	(W2)	—
[7]	CASSETTE GUIDE (LEFT)	T	M2	(2)	—
[8]	SUPPLY CLUTCH ASSY	T	M2	(W2)	—
[9]	WHEEL GEAR	T	M2	(W2)	See, Adjustment procedure for Section 2.2.5
[10]	ROTARY ENCODER	B	M3	4(S3a)	The function of this part varies according to the ASSY (VHS/SVHS) which this part is incorporated in. (Refer to fig. 2-2-6)
[11]	TIMING BELT	B	M3	—	—
[12]	CENTER PULLEY UNIT	T/B	M3	2(S3a)	—
[13]	CASSETTE GUIDE (R) ASSY	T	M3	(S3b), (P3)	(Only use SVHS model)
[14]	TAKE UP GEAR	T	M3	(W3a)	—
[15]	BRAKE SUB GEAR	T	M3	(W3a)	—
[16]	PINCH ROLLER ARM ASSY	T	M3	(W3b)	—
[17]	TAKE UP GUIDE ARM ASSY	T	M3	(W3a)	—
[18]	LINK ARM ASSY	T	M4	(W4)	—
[19]	LED GUIDE	T	M4	(S4a)	—
[20]	A/C HEAD UNIT	T	M4	2(S4b)	—
[21]	SLANT POLE BASE ASSY	T	M5	(S5a)	—
[22]	CAPSTAN MOTOR	T	M5	3(S5a)	—
[23]	MOTOR BASE	T	M5	2(S5b), (S5c)	—
[24]	BRUSH	B	M6	(S6a)	—
[25]	DRUM FINAL ASSY	T/B	M6	2(S6b), 2(S6c) *CATCHER	—
[26]	GUIDE RAIL	T	M6	7(S6d), 8(S6d)	(Refer to part list.)
[27]	POLE BASE (S)ASSY	T	M6	—	—
[28]	POLE BASE (T)ASSY	T	M6	—	—
[29]	COVER PLATE	T	M7	—	—
[30]	DRIVE LEVER ASSY	T	M7	—	—
[31]	MOTOR BRACKET ASSY	T	M7	3(S7)	—
[32]	CONTROL CAM	T	M8	(W8a)	See, Adjustment procedure for Section 2.2.5
[33]	LINK LEVER	T	M8	—	See, Adjustment procedure for Section 2.2.5
[34]	MIDDLE GEAR	T	M8	—	—
[35]	LOADING GEAR(T) ASSY	T	M8	(W8b)	See, Adjustment procedure for Section 2.2.5
[36]	LOADING GEAR(S) ASSY	T	M8	(W8b)	—
[37]	LOADING RING ASSY	T	M8	4(S8)	See, Adjustment procedure for Section 2.2.5

Fig.2-2-1

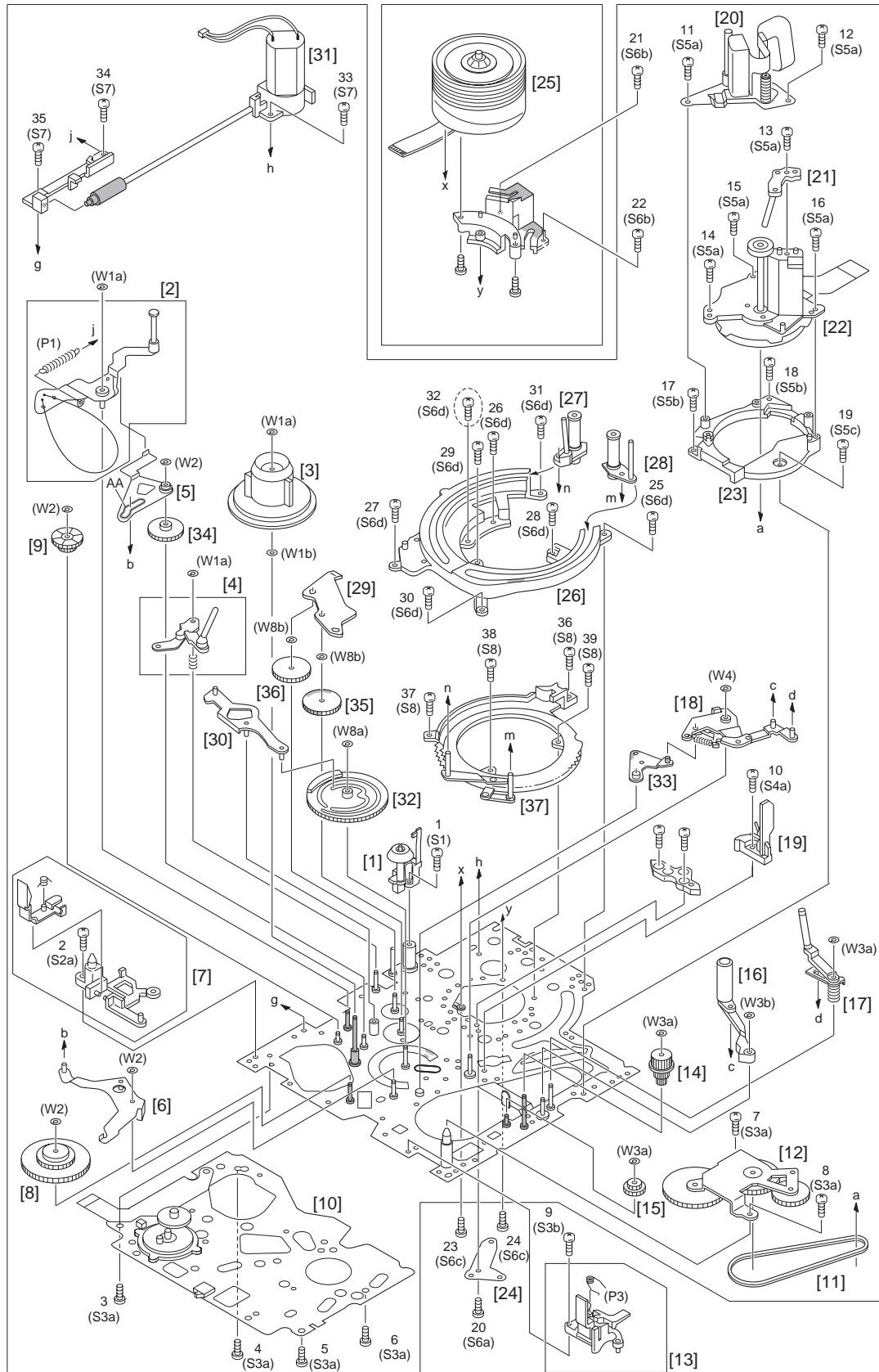


Fig.2-2-2

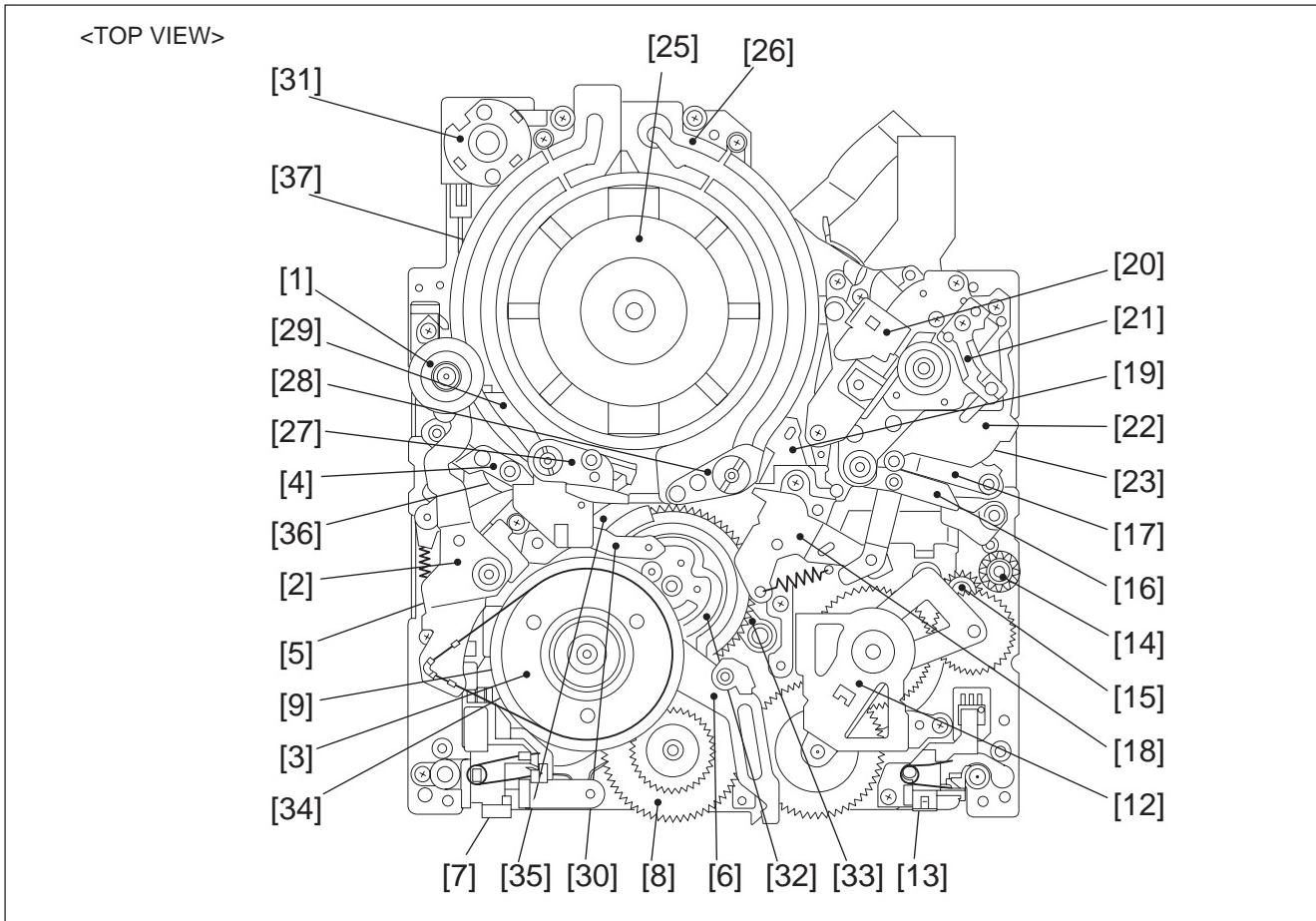


Fig.2-2-3

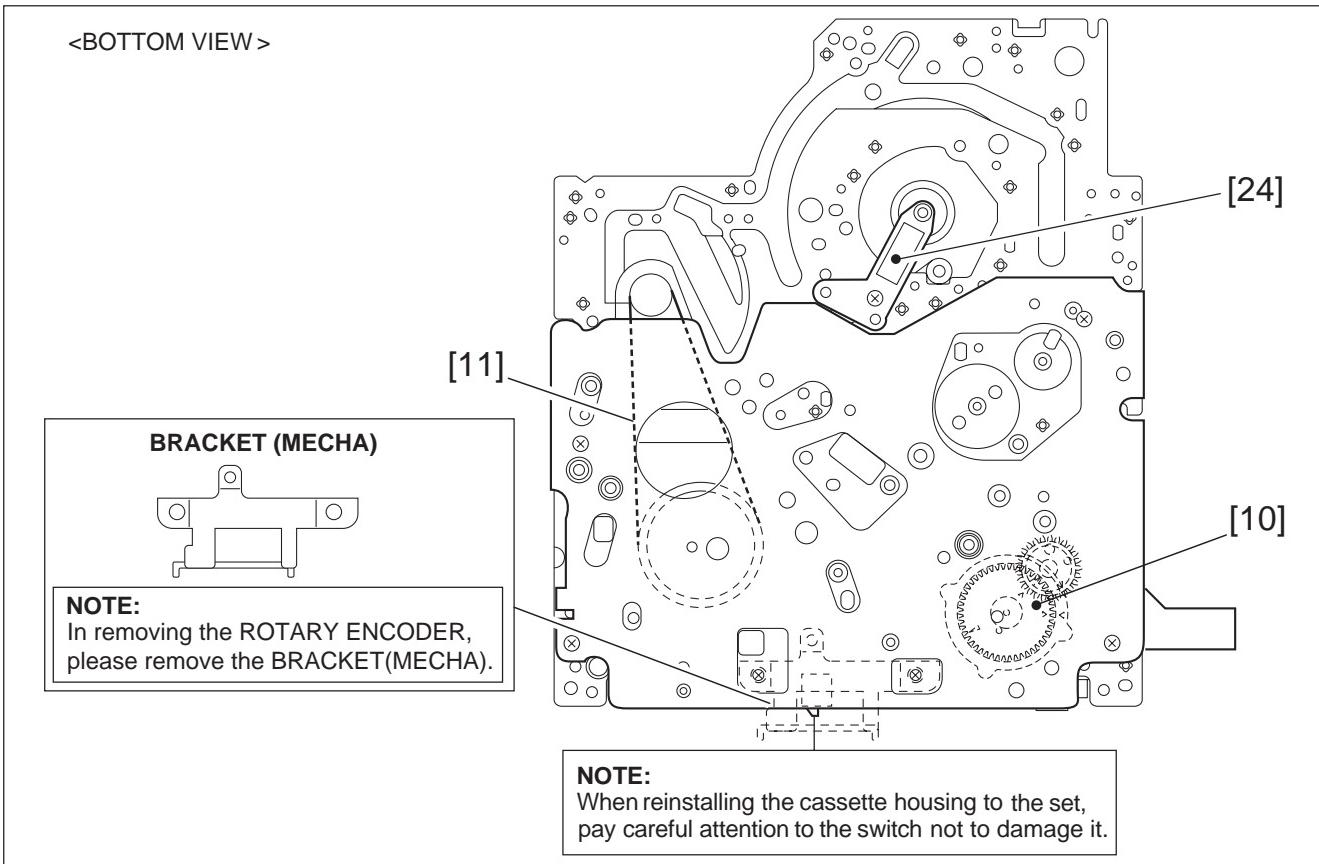


Fig.2-2-4

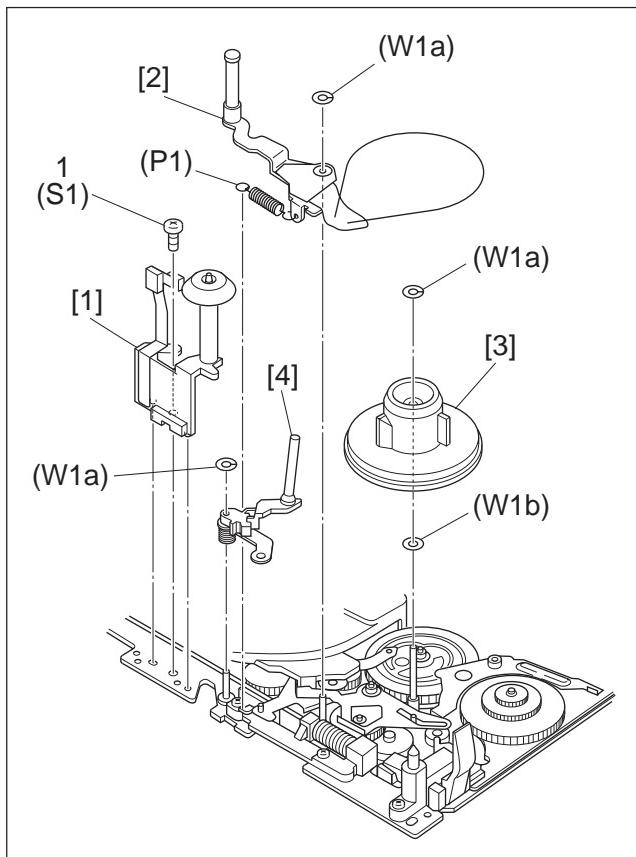


Fig.M1

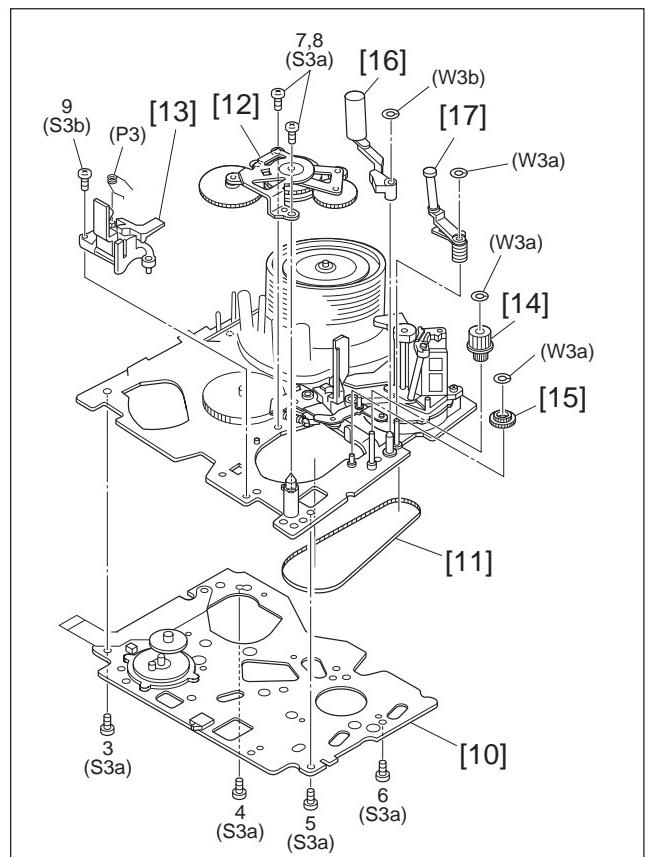


Fig.M3

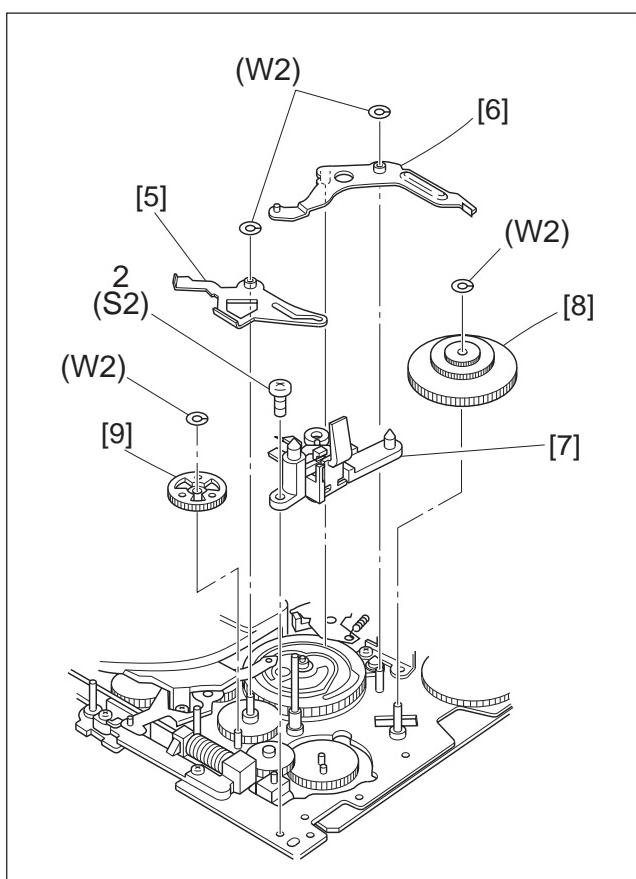
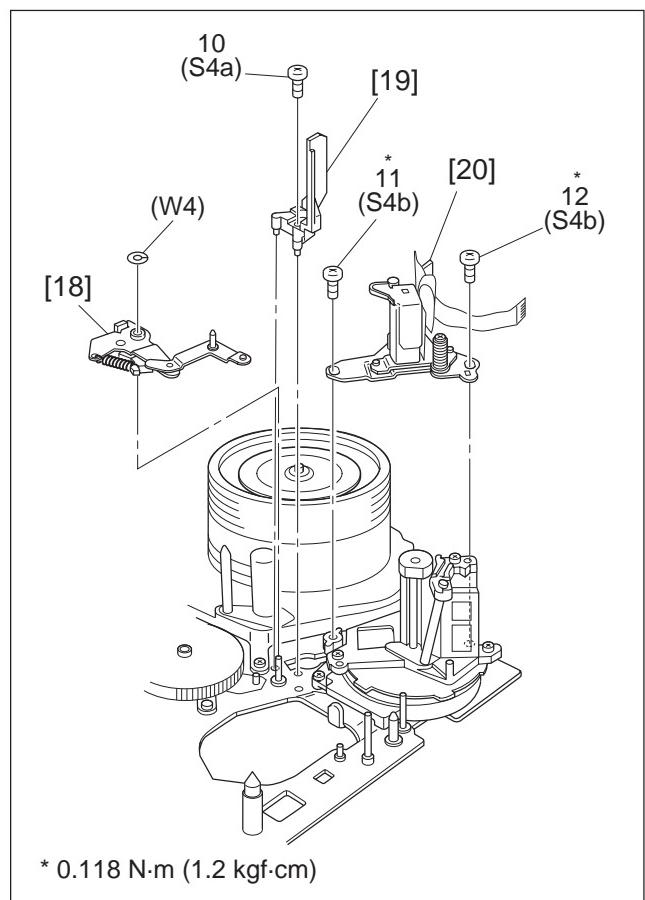


Fig.M2



* 0.118 N·m (1.2 kgf·cm)

Fig.M4

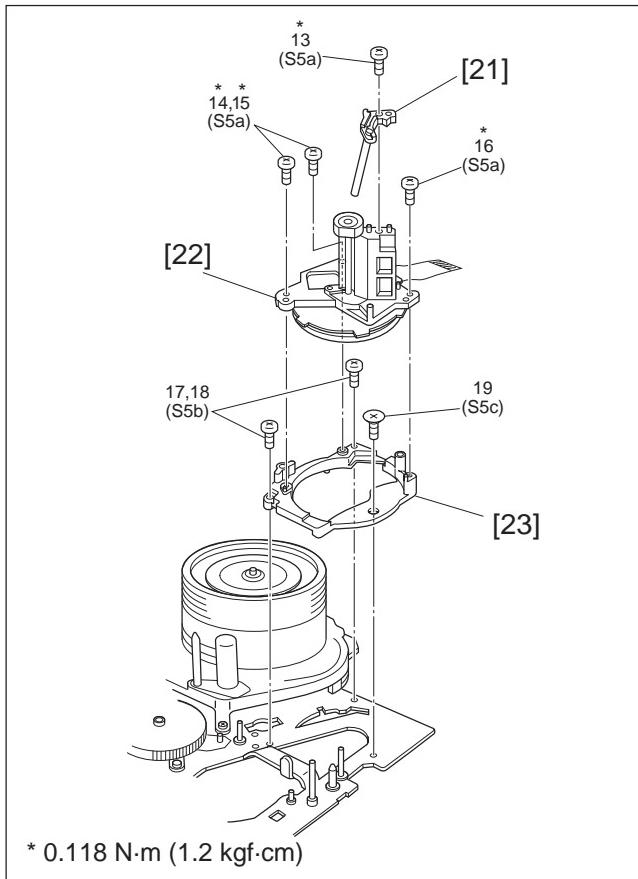


Fig.M5

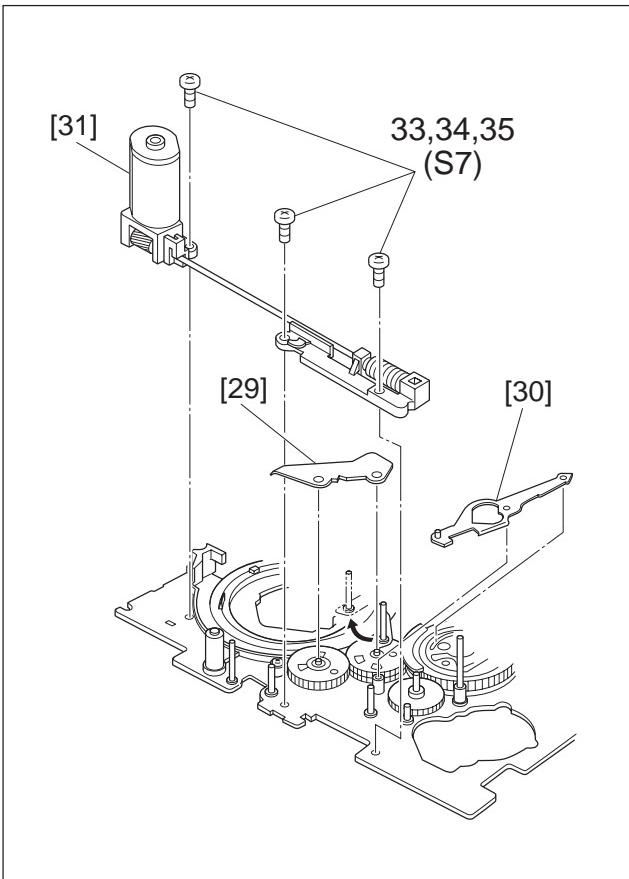


Fig.M7

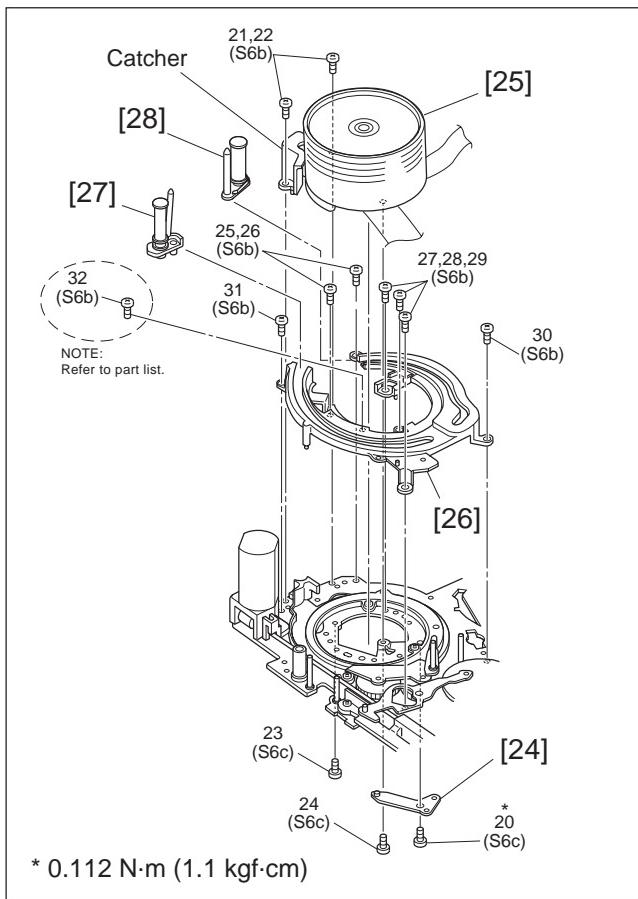


Fig.M6

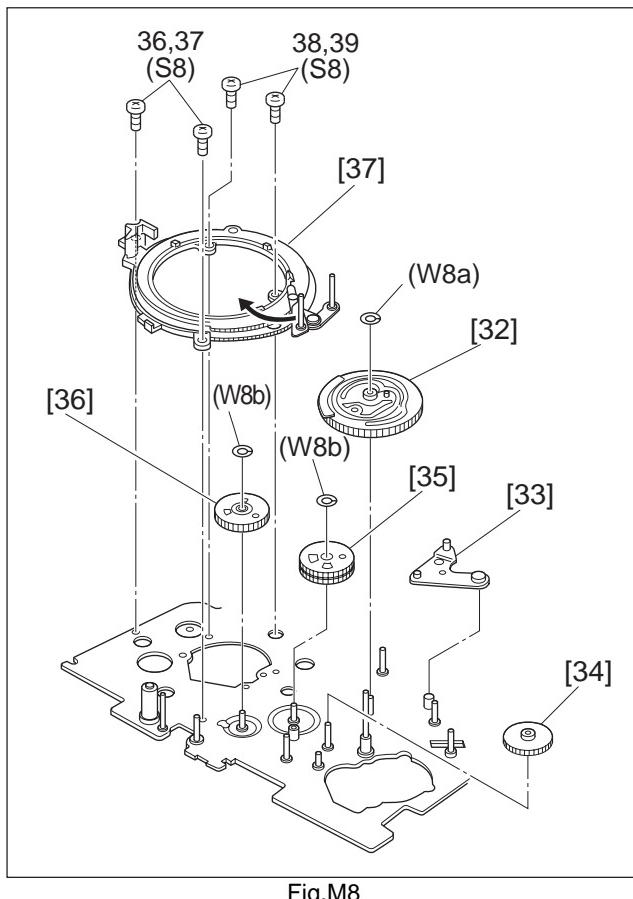


Fig.M8

2.2.4 CHECKUP AND ADJUSTMENT OF MECHANISM PHASE

NOTE:

Pay careful attention to the installing order and phase of mechanism parts of the loading system.

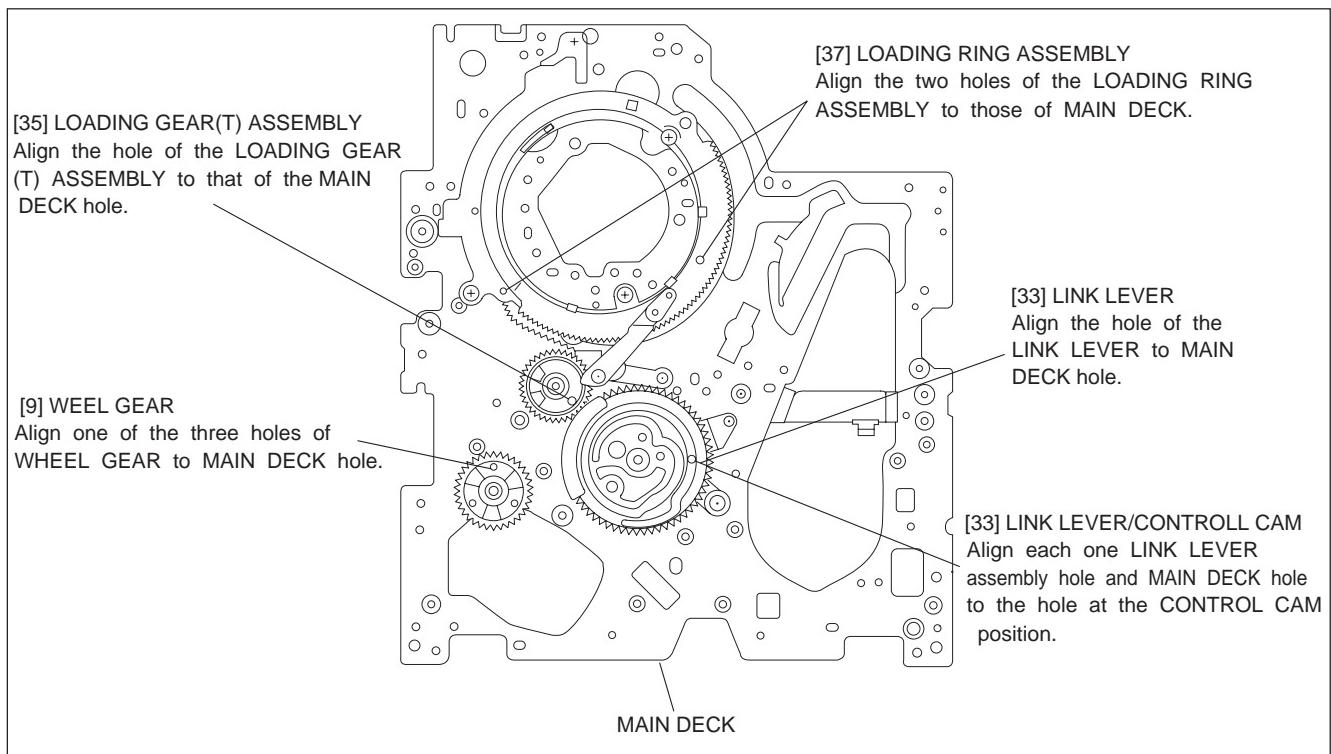


Fig.2-2-5 Top of main deck

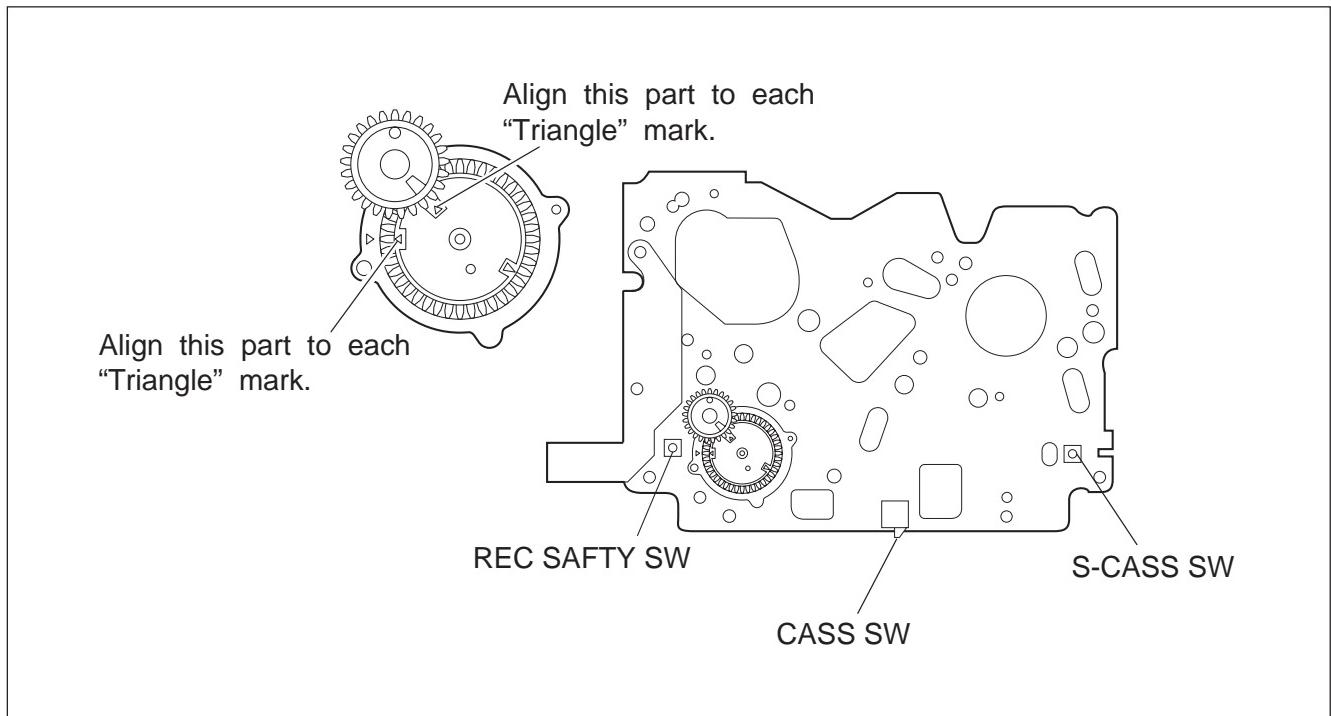


Fig.2-2-6 Rotary encoder

2.2.5 SERVISE NOTE

Use the following chart to manage screws.

Symbol No.	[1]	[7]	[10]	[12]	[13]	[19]	[20]	[21]	[22]	[23]									
Removing order of screw	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Place to stick screw																			
Reference drawing (Fig. No.)	M1	M2			M3				M4				M5						
Screw tightening torque			I										II					I	

Symbol No.	[24]	[25]	[26]	[27]	[31]	[32]	[33]	[34]	[35]	[36]	[37]								
Removing order of screw	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Place to stick screw																			
Reference drawing (Fig. No.)					M6						M7								
Screw tightening torque					III							I							

<NOTE>

- Pay careful attention to tightening torque for each screw.
Torque setting value of torque driver is limited. At the values over the maximum torque setting value, fasten a screw manually not to damage the screw thread.

I : 0.216N·m(2.2kgf·cm) II : 0.118N·m(1.2kgf·cm) III : 0.112N·m(1.1kgf·cm)

Fig.2-2-7

2.2.6 REMARKS

2.2.6.1 Cleaning

- (1) For cleaning of the upper drum (particularly video heads), use fine-woven cotton cloth with alcohol soaks through. Do not move the cloth but turn the upper drum counterclockwise.

NOTE:

Make sure not to move the cloth in the vertical direction to the video head, since it may cause damage of the video heads.

- (2) For cleaning of parts of the tape transport system except the upper drum, use fine-woven cotton cloth or cotton swab soaked alcohol.
- (3) After cleaning, confirm that the cleaned parts are completely dry before loading the deck with cassette tape.

2.2.6.2 Applying oil and grease

- (1) Periodical oiling and greasing are not required but should be done to new parts when replacing. If oil and grease on the other parts of the other party are old and dirty, wipe them clean and apply new oil or grease.
- (2) For parts and points to apply oil and grease, refer to the exploded view of the 3.2 VHS-C MECHANISM ASSEMBLY. Fig.2-2-8 specifies oil and grease to be used.
- (3) When oiling, clean the objective parts with alcohol first and apply one or two drop(s) of oil. Too much oiling causes rotary parts to slip because of oil leakage.

Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-JB	AA
Oil	YTU94027	BB

specifies oil and grease to be used

Fig.2-2-8

2.3 VHS MECHANISM

2.3.1 Notes

This model's mechanism relates closely to the rotary encoder and system control circuit (the rotary encoder is meshed with the control cam).

The system control circuit detects the mechanism condition using the rotary encoder's phase (internal switch phase). Therefore, the parts such as the rotary encoder, control plate, loading gear and control cam need to be installed correctly in order for the mechanism to operate properly. (For the mechanism phase adjustment, refer to the installation of each part.)

- Before using a soldering iron, be sure to disconnect the power plug from the AC outlet.
- Do not touch any of the adjustment points until a defect position is specified.
- When plugging or unplugging the connector, be sure not to damage the wire.
- Be sure the springs are hooked all the way around and in the correct direction.
- When performing repairs, take care not to damage a catch, etc.

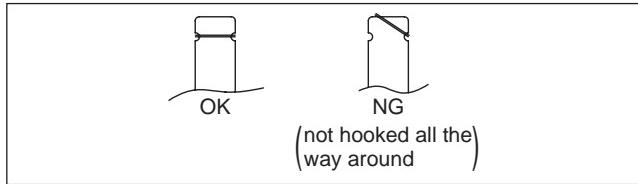


Fig.2-3-1

2.3.2 Mechanism operation check

When the mechanism is operated without a cassette loaded, operate the mechanism in the mechanism service mode.

2.3.3 Setting the mechanism assembling mode

The mechanism-assembling mode is provided with this mechanism. When disassembling and assembling, it is required to engage this mode.

Set the mode by adopting the following procedures.

- (1) Remove the mechanism assembly using the disassembling procedure.
- (2) Turn gear (a) of the loading motor manually to set the mechanism assembly to the eject end mode. Make sure that the main deck is connected to the guide hole (a) of the drive lever and the seal (a) of the main deck is connected to the mark "E" of the control plate. This condition is called the mechanism-assembling mode.

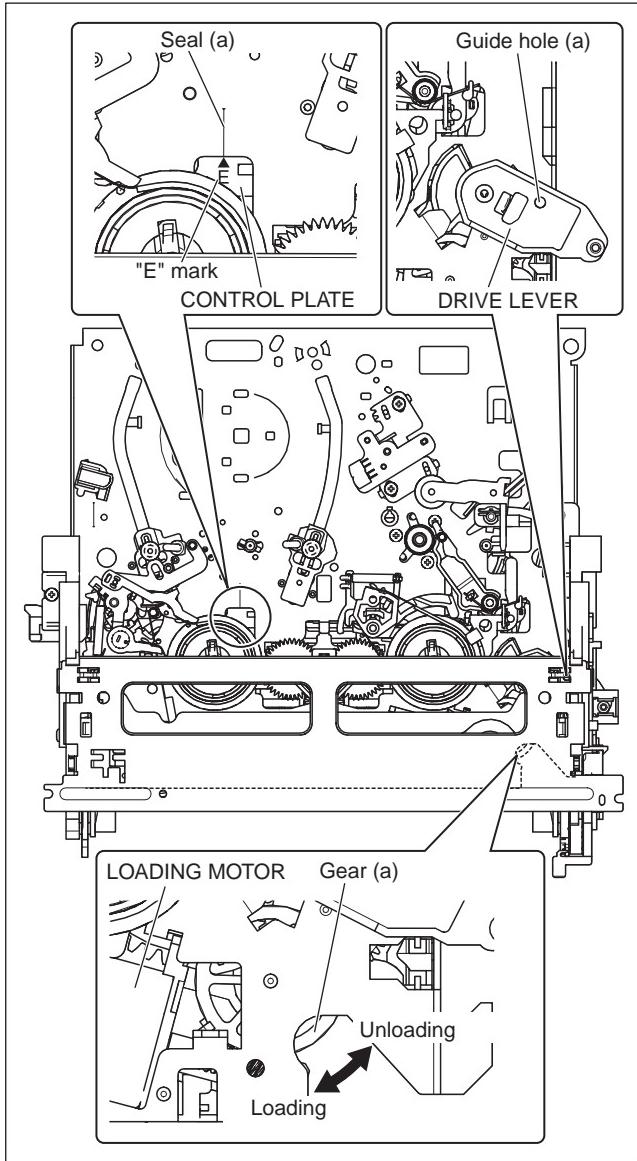


Fig.2-3-2

2.3.4 Layout of the main mechanism parts

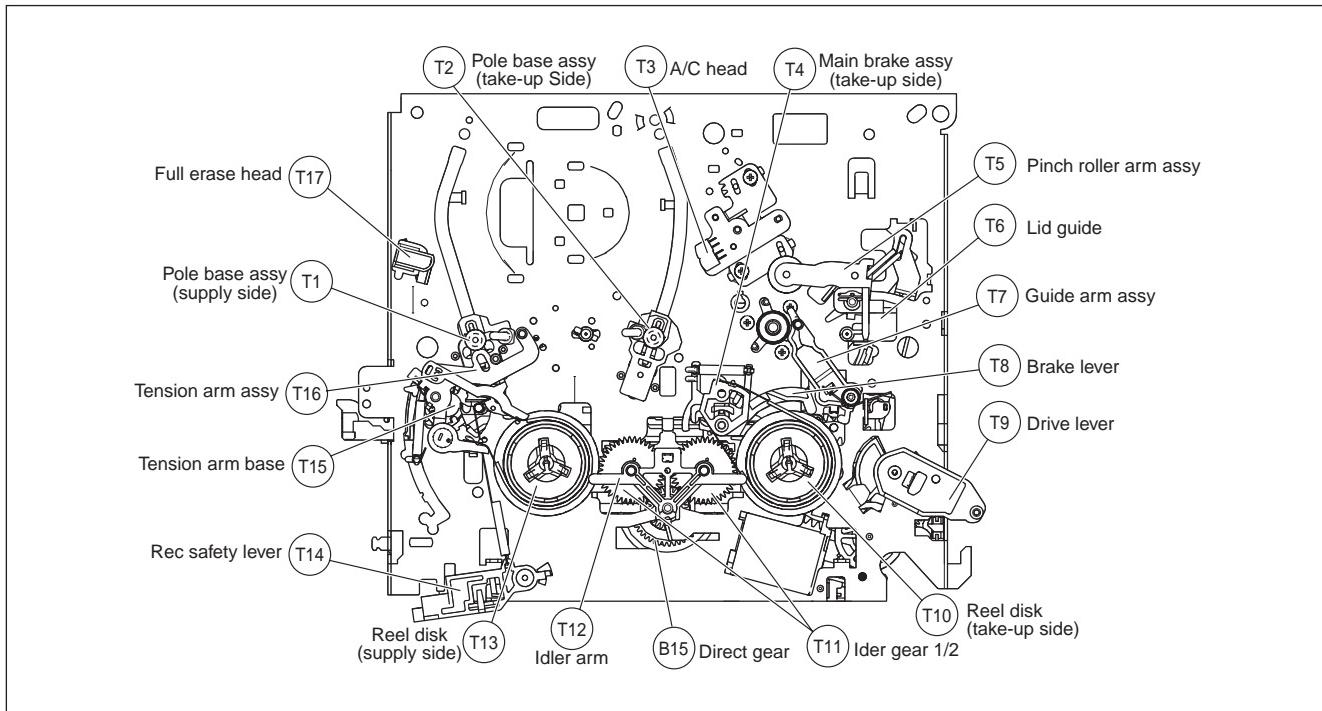


Fig.2-3-3

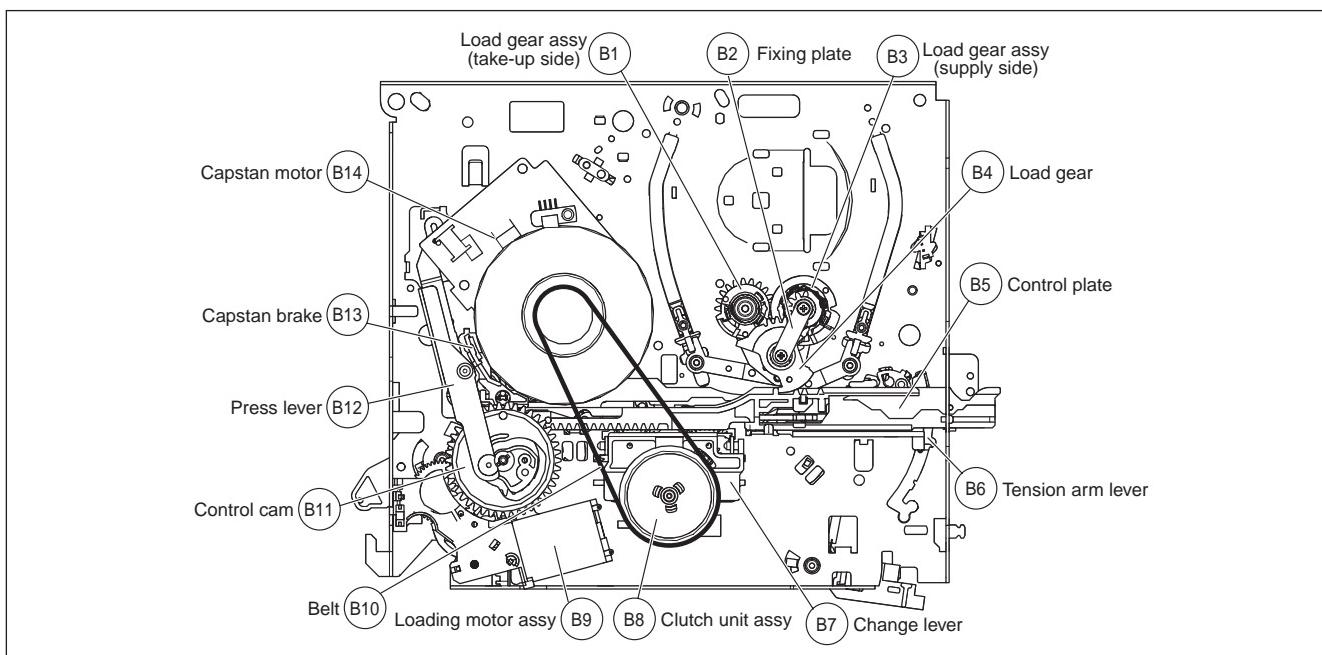


Fig.2-3-4

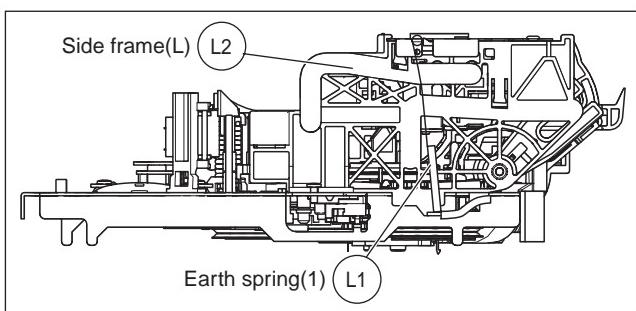


Fig.2-3-5

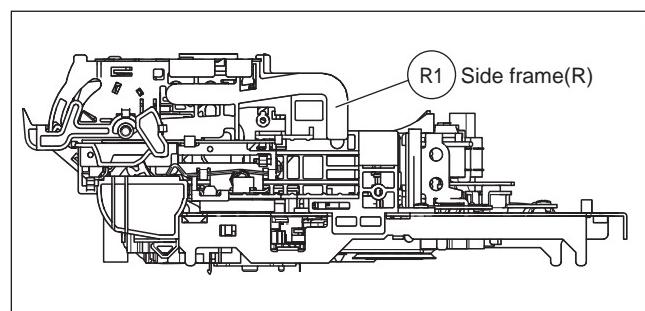


Fig.2-3-6

2.3.5 Disassembling procedure table

This table shows the order of parts removal when replacing each part. For replacement, remove the parts in the order of 1 to 13 shown in the table and install the parts in the reverse order.

The symbol number before each part name shows the number in the figure "Layout of the main mechanism parts". T and B on the right of each part name show the side from which the part should be removed (T: From the front of the mechanism, B: From the rear of the mechanism, T/B: From both sides).

	Symbols and numbers			L1	-	-	L2	-	R1	T6	T12	T11	T4	T10	T16	T15	B12	B11	B13	B9	B10	B2	B4	B3	B1	B5	B8	B15
Symbols and numbers	Removal parts (Reference items) Replacement parts	Front(T)/Back(B) of mechanism	Number of removal steps	Earth spring (1)	Top frame	Cassette holder	Side frame (L)	Drive arm	Side frame (R)	Lid guide	Idler arm	Idler gear 1/2	Main brake (T)	Reel disk (T)	Tension arm	Tension arm base	Press lever	Control cam	Capstan brake assy	Loading motor assy	Belt	Fixing plate	Load gear	Loading gear assy (S)	Loading gear assy (T)	Control plate	Clutch unit	Direct gear
L1	2.1 Earth spring (1)	T	1																									
-	2.1 Top frame	T	2	1																								
-	2.1 Cassette holder	T	3	1	2																							
L2	2.1 Side frame (L)	T	3	1	2																							
-	2.1 Drive arm	T	5	1	2	3	4																					
R1	2.1 Side frame (R)	T	3	1	2																							
T3	2.2 A/C head	T	1																									
T17	- FE head	T/B	1																									
T7	2.3 Guide arm assy	T	1																									
T6	2.3 Lid guide	T	1																									
T5	2.3 Pinch roller arm assy	T	2														1											
T12	2.4 Idler arm	T	4	1	2	3																						
T11	2.4 Idler gear 1/2	T	5	1	2	3										4												
T4	2.5 Main brake assy (T)	T	6	1	2	3										4	5											
T10	2.5 Reel disk (T)	T	7	1	2	3										4	5	6										
T16	2.5 Tension arm	T	6	1	2	3										4	5											
T13	2.5 Reel disk (S)	T	7	1	2	3										4	5		6									
T15	2.5 Tension arm base	T	7	1	2	3										4	5		6									
-	- T-up head	T	8	1	2	3										4	5		6	7								
-	- T-up lever	T	8	1	2	3										4	5		6	7								
T8	2.5 Brake lever	T	8	1	2	3										4	5	6	7									
T14	2.5 Rec safety lever	T	7	1	2	3	4	5	6																			
B12	2.6 Press lever	B	1																									
B11	2.6 Control cam	B	2																1									
B13	2.6 Capstan brake assy	B	3																1	2								
B9	2.6 Loading motor assy	B	4																1	2	3							
B10	2.7 Belt	B	1																									
B14	2.7 Capstan motor	T/B	2																		1							
-	- Wire holder	T/B	1																									
B2	2.7 Fixing plate	B	1																									
B4	2.7 Load gear	B	2																			1						
B3	2.7 Loading gear assy(S)	B	3																		1	2						
B1	2.7 Loading gear assy(T)	B	4																		1	2	3					
T1	- Pole base assy(S)	T/B	4																		1	2	3					
T2	- Pole base assy(T)	T/B	5																		1	2	3	4				
-	- Load gear base	B	5																		1	2	3	4				
B5	2.7 Control plate	B	6																1	2		3	4	5				
T9	- Drive lever	T/B	10	1	2	3	4	5	6									7	8	9								
B8	2.8 Clutch unit	B	2																		1							
B15	2.8 Direct gear	B	3																		1				2			
B7	- Change lever	T/B	6													1	2						3			4	5	
B6	- Tension arm lever	T/B	14	1	2	3									4	5		6	7	8	9		10	11	12		13	

2.3.6 REPLACEMENT OF THE MAIN MECHANISM PARTS

2.3.6.1 Cassette holder

2.3.6.1.1 Removal

- (1) Remove the screws (a) and (b).
- (2) Hold up the top frame, cassette holder assembly, drive arm assembly and side frames (L/R) all together and remove them by releasing the hooks (a) and (b).

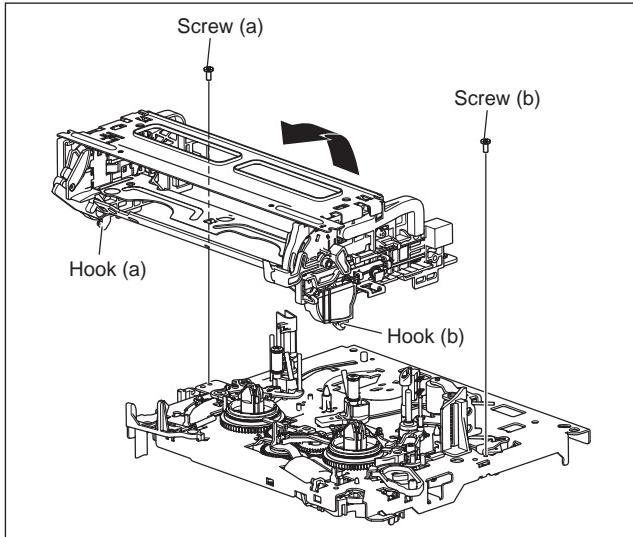


Fig.2-3-7

2.3.6.1.2 Installation (phase adjustment)

- (1) Turn gear (a) of the loading motor assembly so that the main deck connects to the guide hole (a) of the drive lever.
- (2) Hook the main deck to hooks (a) and (b).
- (3) Place the projection of the drive lever to section (a) of the side frame (R) and install the cassette holder to the main deck. Make sure that the bosses of the side frame (L/R) connect with the holes (a) and (b) of the main deck.
- (4) Secure screws (a) and (b).

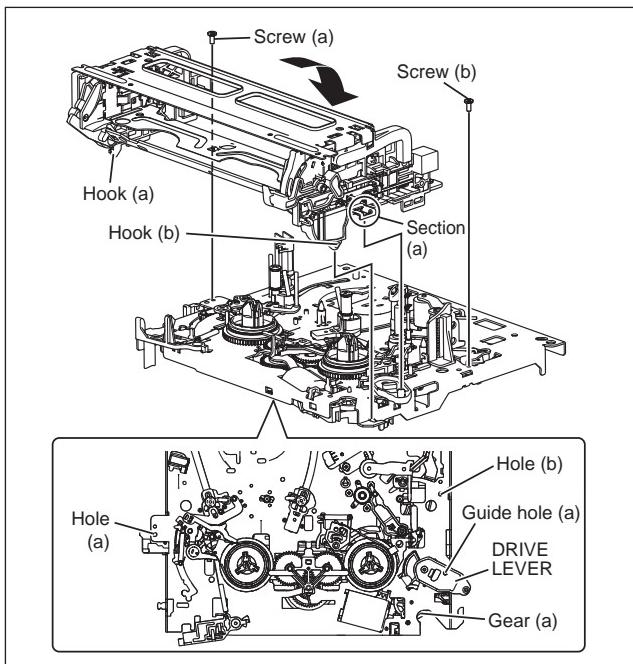


Fig.2-3-8

2.3.6.1.3 Disassembling

- (1) Release hook (a) to remove the earth spring (1) from the top frame.
- (2) Release the catches (a) and (b) and pull the top frame in the direction shown by the arrow (a) to remove it.
- (3) Pull out the side frame (R).
- (4) Pull out the cassette holder assembly and drive arm assembly from the side frame (L).

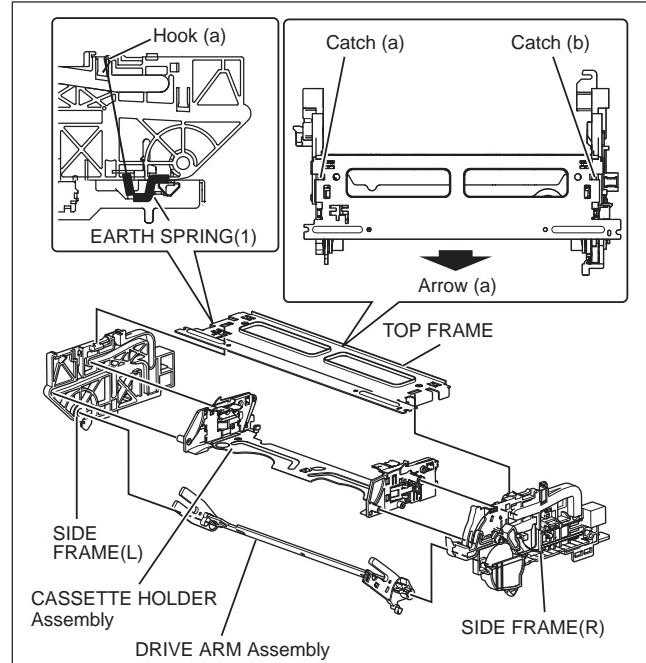


Fig.2-3-9

2.3.6.1.4 Assembling (installation and phase adjustment)

- (1) Turn gear (a) of the loading motor assembly so that the main deck connects to the guide hole (a) of the drive lever.
- (2) Place the projection of the drive lever on section (a) of the side frame (R) and install the side frame (R) to the main deck.
- (3) Secure screw (b).
- (4) Place section (b) of the drive arm on the gear of the side frame (R). Make sure that the pin of the door opener connects with section (c) of the drive arm.
- (5) Place the drive arm on section (d) of the side frame (L) and install the side frame (L) on the main deck. Be sure to connect the earth spring (1) to the side frame (L).
- (6) Secure screw (a).
- (7) Turn gear (a) of the loading motor assembly until the drive arm is vertical.
- (8) Place the slit of the side frame (L/R) at the foot of the cassette holder assembly and install the cassette holder.
- (9) Place the top frame on the position guide (a) of the side frame (L/R) and push it in the direction shown by the arrow (a) for installation.
- (10) Hook the earth spring (1) to the hook (a) of the top frame.

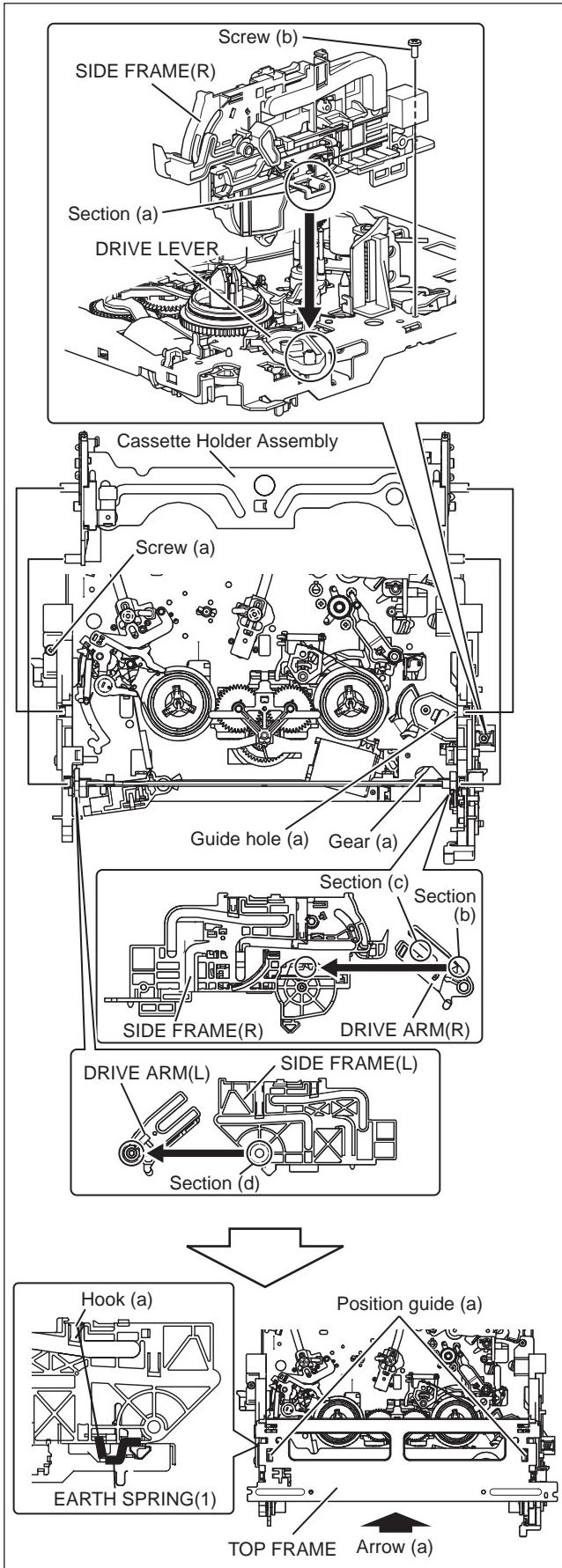


Fig.2-3-10

2.3.6.2 A/C head

2.3.6.2.1 Removal

- (1) Remove screws (a) and (b).
- (2) Remove the A/C head together with the head base.
- (3) Remove the screws (c), (d) and (e) to remove the spring (a) and the A/C head from the Head base.

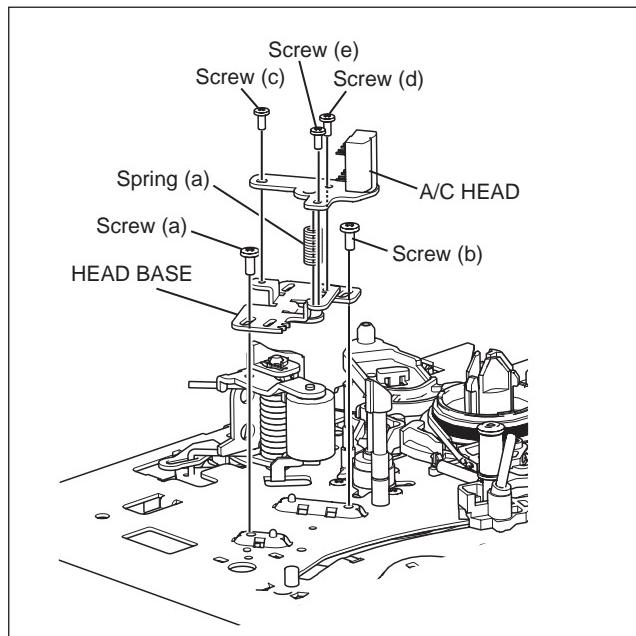


Fig.2-3-11

2.3.6.2.2 Installation (initial setting)

To install the A/C head to the head base, secure the screws in the order of (c), (d) and (e). To make the adjustment easy, temporarily elevate the A/C head.

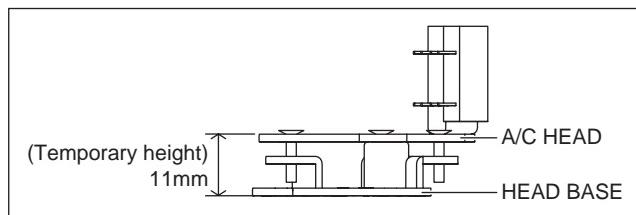
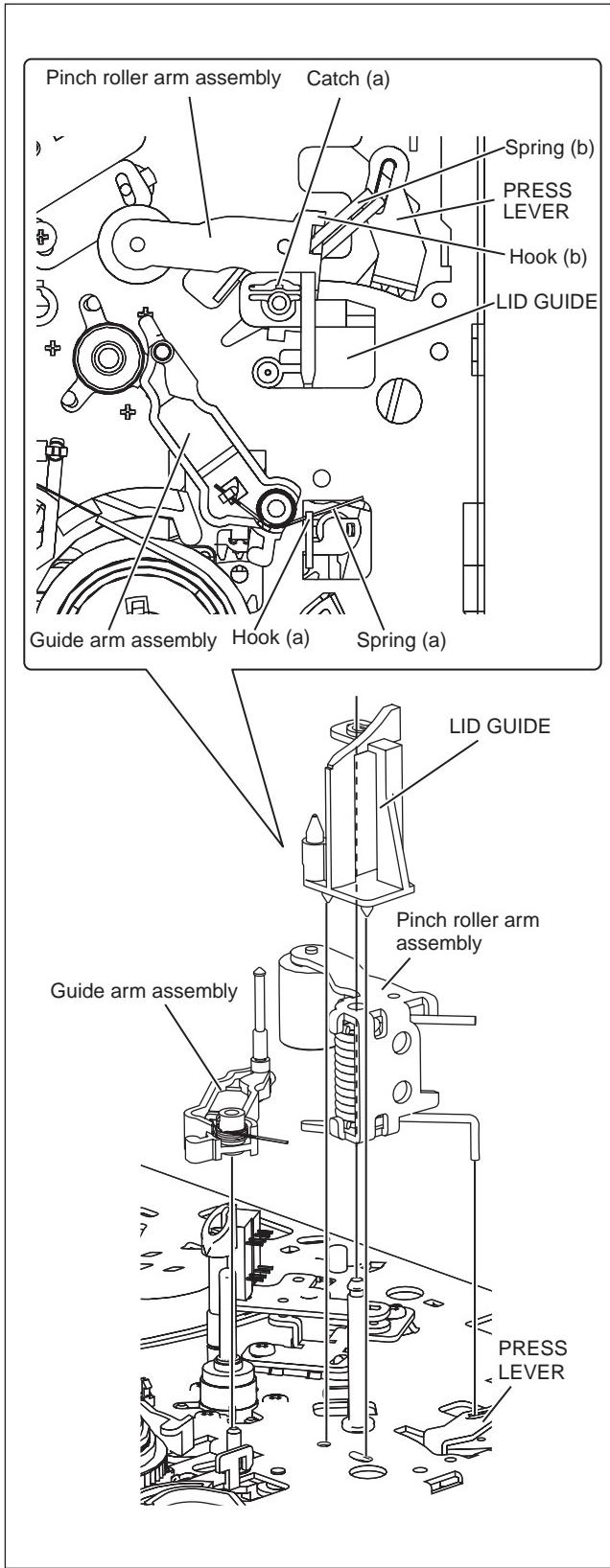


Fig.2-3-12

2.3.6.3 Guide arm, pinch roller arm

2.3.6.3.1 Removal

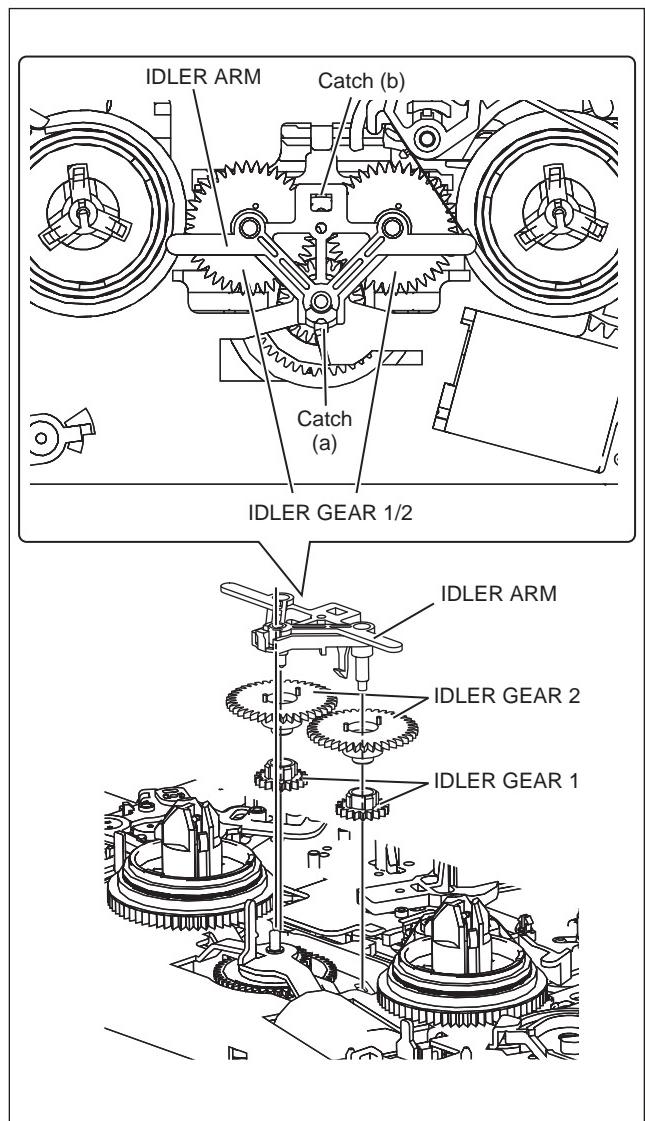
- (1) Remove the spring (a) from the hook (a) and detach the guide arm assembly.
- (2) Release the catch (a) to remove the lid guide.
- (3) Remove the spring (b) from the hook (b) and detach the pinch roller arm assembly.



2.3.6.4 Idler arm, idler gear 1/2

2.3.6.4.1 Removal

- (1) Release the catches (a) and (b) to detach the idler arm.
- (2) Detach the idler gear 1/2.



2.3.6.5 Main brake (T), brake lever, tension arm, reel disk (S/T), Rec safety lever

2.3.6.5.1 Removal

- (1) Remove the spring (a). (Detach section (b) of the spring (a).)
- (2) Release the catch (a) to detach the main brake (T).
- (3) Release the catch (b) to detach the reel disk (T) and the spacer.
- (4) Lift up and turn section (b) of the brake lever counterclockwise to remove the brake lever.
- (5) Remove the spring (b) from the hook (a).
- (6) Release the catch (c) to detach the tension arm.
- (7) Release the catch (d) to detach the reel disk (S) and the spacer.
- (8) Remove the spring (c) from the hook (b).
- (9) Turn the tension arm base in the direction shown by arrow (a) to release catch (e). Place the projections of the tension arm base to the holes (a) to detach the tension arm base.
- (10) While releasing the catch (f), turn the Rec safety lever counterclockwise to remove it.

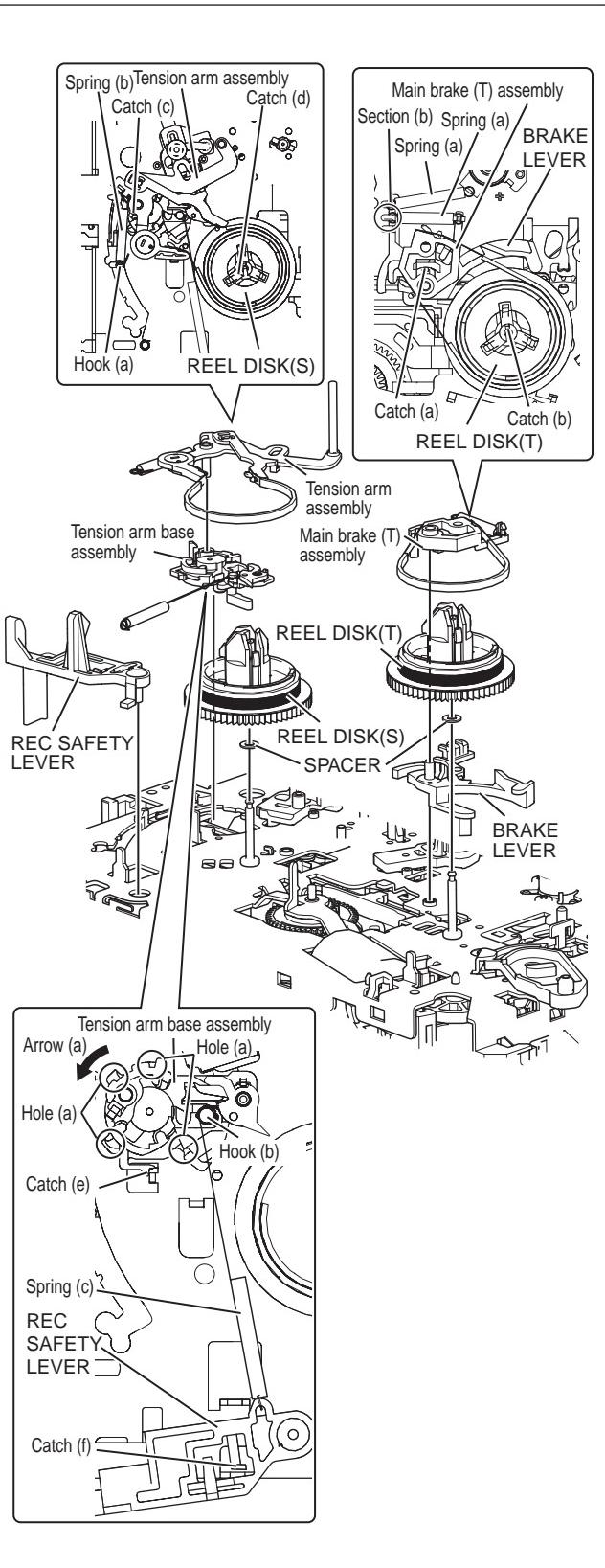


Fig.2-3-15

2.3.6.6 Press lever, control cam, capstan brake assembly, loading motor assembly

2.3.6.6.1 Removal

- (1) Remove the slit washer (a) to detach the press lever.
- (2) Release the slit washer (b) to detach the control cam.
- (3) Release the catch (b) to detach the capstan brake assembly.
- (4) Remove the solder (a).
- (5) Remove the screw (a).
- (6) Release the catches (c) and (d) to detach the loading motor assembly.

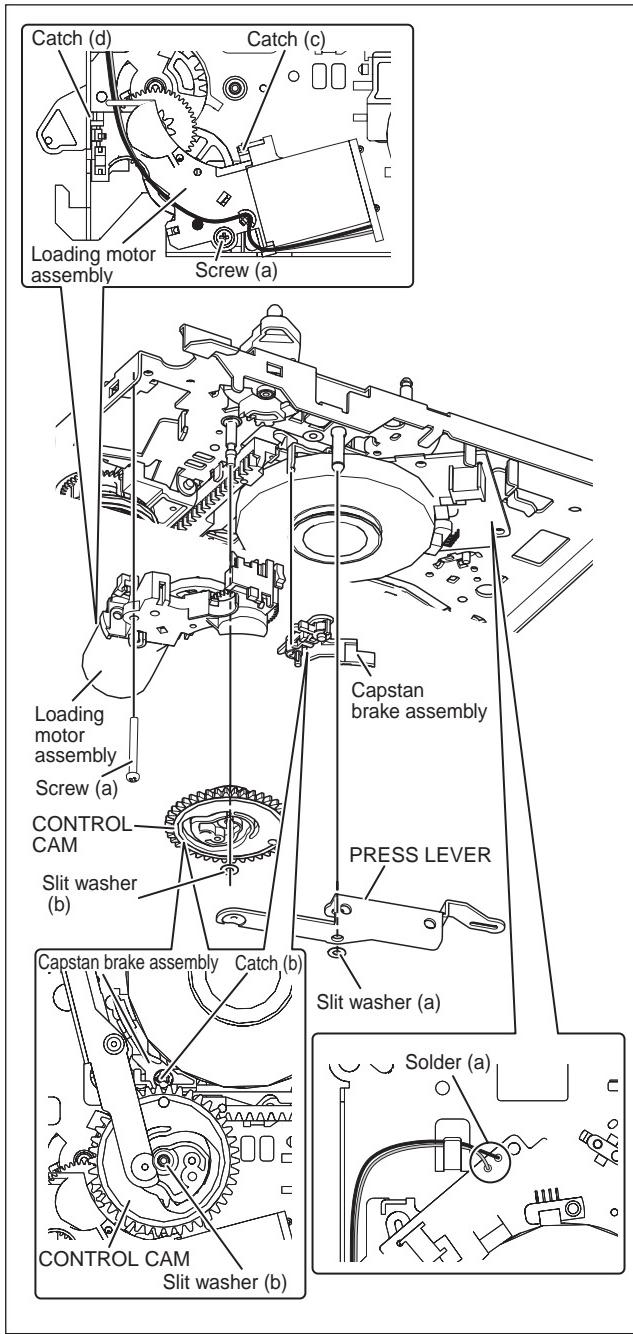


Fig.2-3-16

2.3.6.6.2 Installation (phase adjustment)

- (1) Attach the loading motor assembly to the main deck.
- (2) Secure the screw (a).
- (3) Solder the wire to section (a).
- (4) Arrange the wire along with the position guide (b).
- (5) Attach the capstan brake assembly to the main deck.
- (6) Place the main deck on the guide hole (a) of the control plate.
- (7) Place the main deck on the guide hole (b) of the drive lever.
- (8) Place the main deck no guide hole (c) of the control cam to install the control cam.
- (9) Move the capstan brake in the direction shown by the arrow (a) to attach the press lever to the shaft (a). Make sure that the boss of the press lever fits in the control cam, and that the shaft (b) of the pinch roller arm assembly connects with the hole of the press lever.
- (10) Attach slit washer (a) to shaft (a).

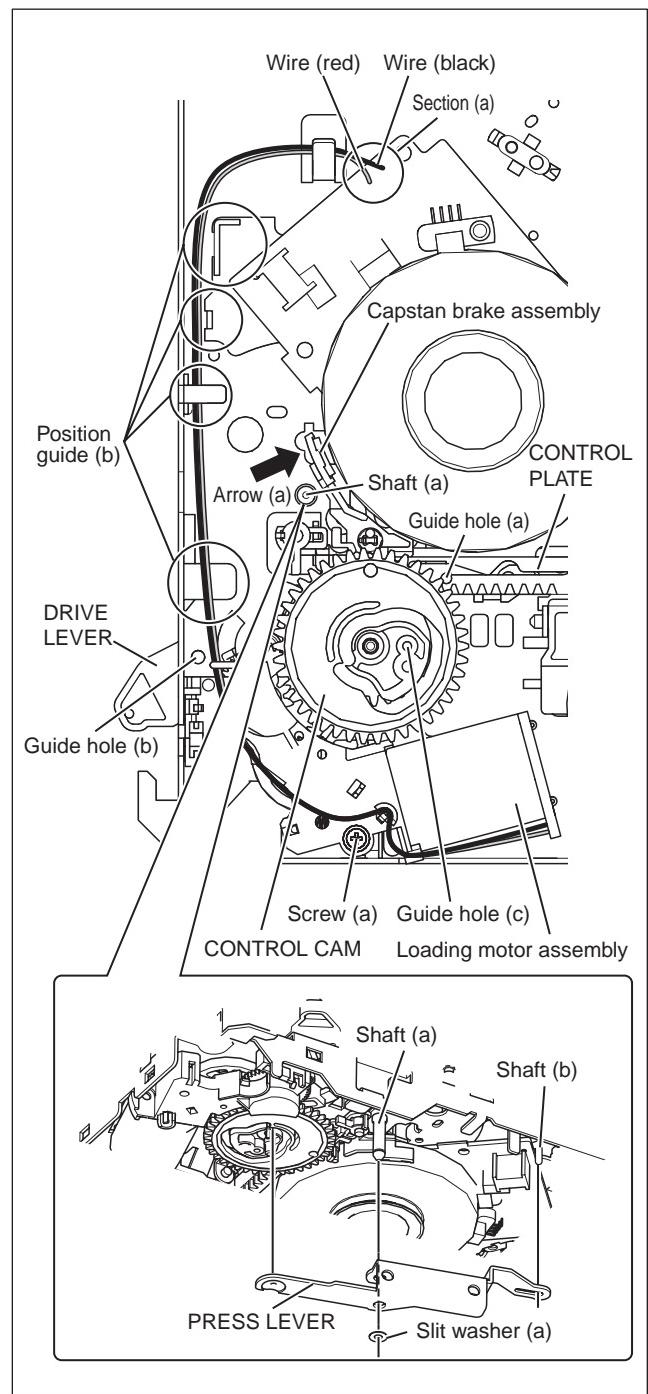


Fig.2-3-17

Note:

- When replacing the worm bearing of the loading motor assembly, attach it according to the following specification.

If worm bearing is not attached correctly, a mechanism noise may occur. (See Fig. 2-3-18)

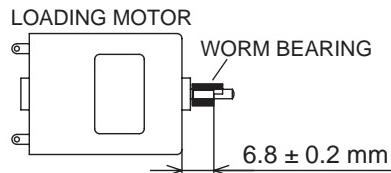


Fig.2-3-18

2.3.6.7 Capstan motor, load gear, control plate

2.3.6.7.1 Removal

- (1) Detach the belt.
- (2) Check that the FFC connector on the drum is disconnected.
- (3) Release the catch (a) to remove the FFC wire.
- (4) Remove the screws (a) to detach the capstan motor.
- (5) Remove the screws (b) to detach the fixing plate.
- (6) Release the catch (b) to detach the load gear.
- (7) Turn the load gear (S/T) in the loading direction to detach it.
- (8) Remove the control plate.

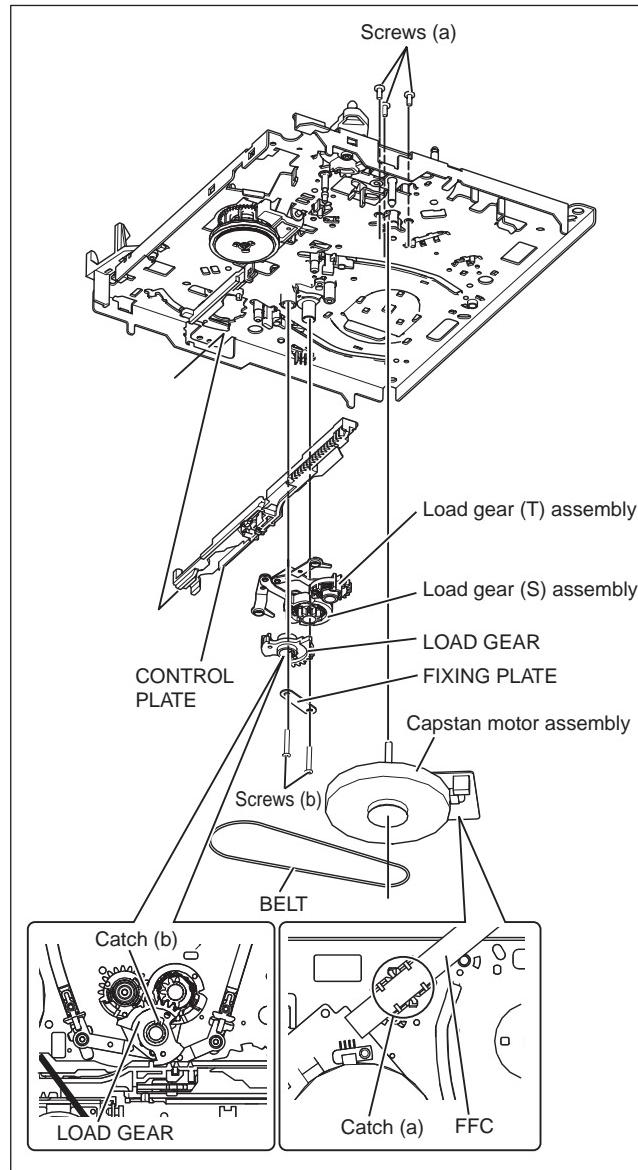


Fig.2-3-19

2.3.6.7.2 Installation (phase adjustment)

- (1) Place the main deck on the guide hole (a) of the tension arm lever.
- (2) Place the main deck on the guide hole (b) of the brake lever.
- (3) Attach the control plate to align with the position guide (a).
- (4) Place the hole (c) of the load arm (T) on the pole base (T) and the load gear (T) on the load gear base.
- (5) Place the hole (d) of the load arm (S) on the pole base (S) and the load gear (S) on the load gear base. Be sure to align the guide mark (e) of the load gear (T) to that of the load gear (S).
- (6) Turn the load gear (S/T) in the unloading direction to place the main deck on the guide hole (f) of the load gear (T).
- (7) Place the main deck on the guide hole (g) of the control plate.
- (8) Attach the load gear on the load gear base so that the control plate is placed on the edge (h) of the load gear.
- (9) Place the fixing plate on the shaft of the load gear base and secure the screws (b).

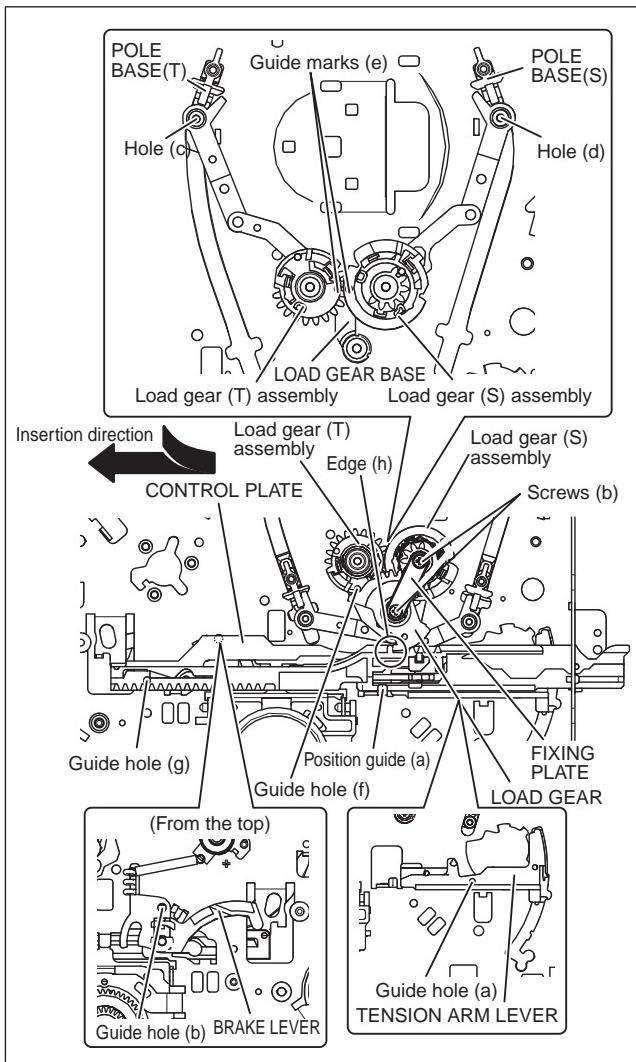


Fig.2-3-20

2.3.6.8 Clutch unit assembly, direct gear

2.3.6.8.1 Removal

- (1) Remove the slit washer (a) to detach the clutch unit assembly.
- (2) Remove the spring (a) and the direct gear.

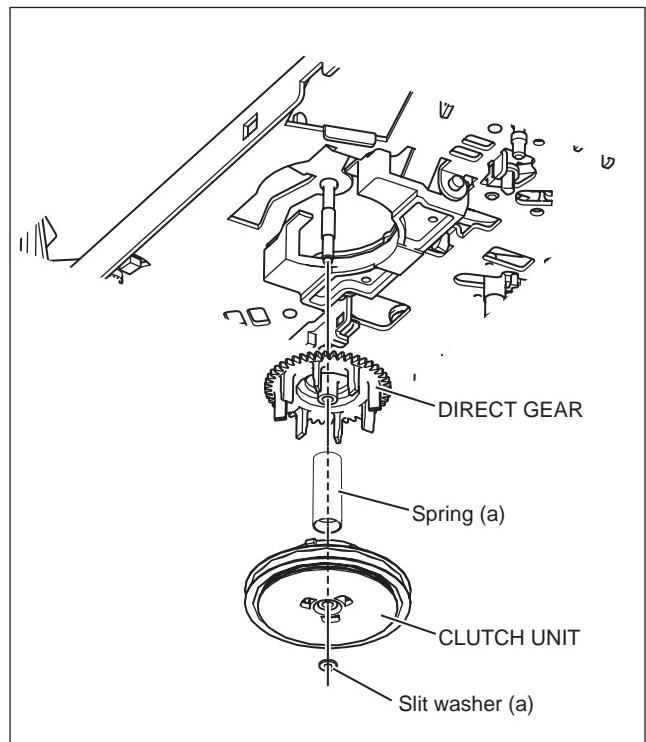
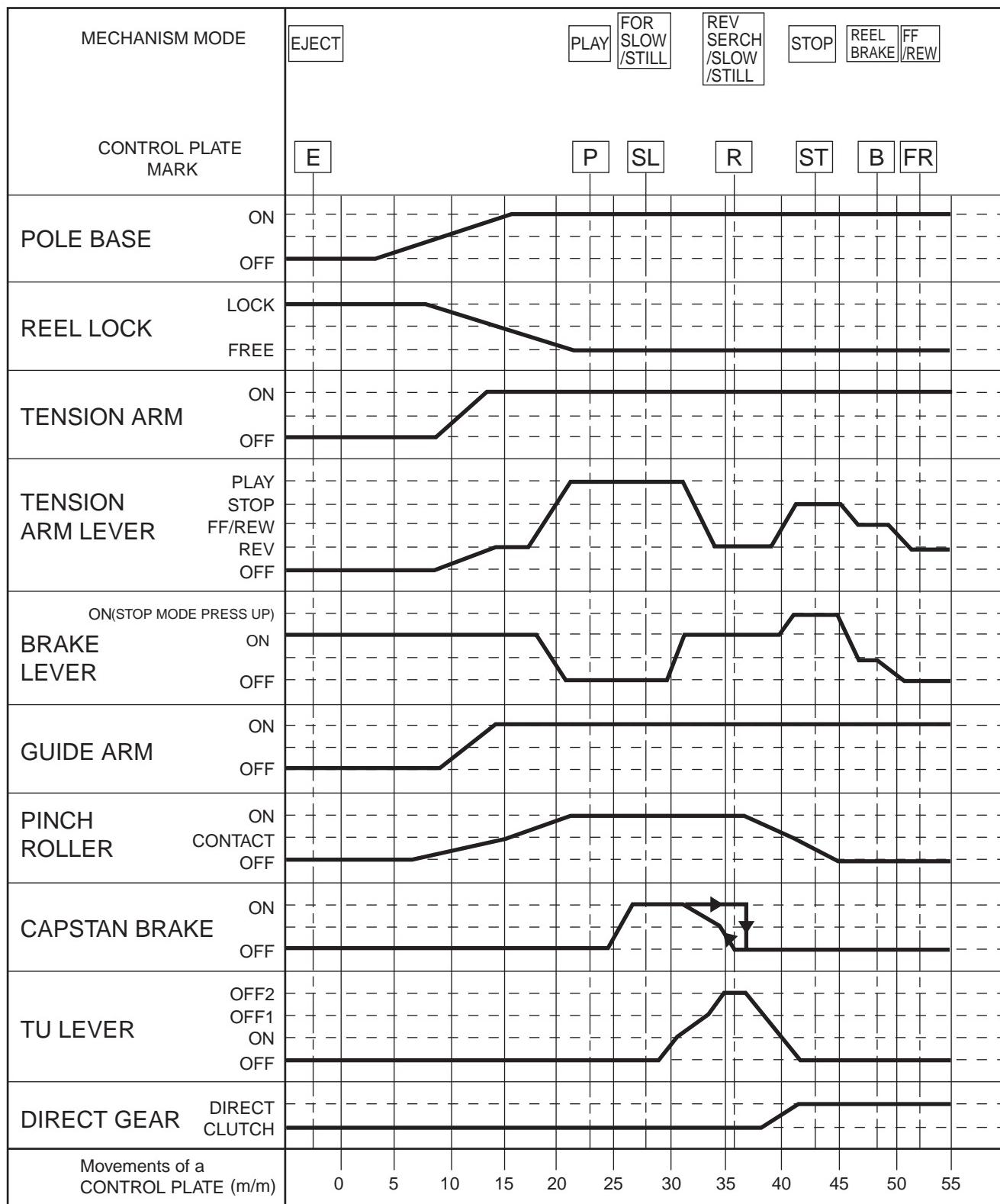


Fig.2-3-21

2.3.7 MECHANISM TIMING CHART



2.3.8 REMARKS

2.3.8.1 Cleaning

- (1) For cleaning of the upper drum (particularly video heads), use fine-woven cotton cloth with alcohol soaks through. Do not move the cloth but turn the upper drum counterclockwise.

NOTE:

Make sure not to move the cloth in the vertical direction to the video head, since it may cause damage of the video heads.

- (2) For cleaning of parts of the tape transport system except the upper drum, use fine-woven cotton cloth or cotton swab soaked alcohol.
- (3) After cleaning, confirm that the cleaned parts are completely dry before loading the deck with cassette tape.

2.3.8.2 Applying oil and grease

- (1) Periodical oiling and greasing are not required but should be done to new parts when replacing. If oil and grease on the other parts of the other party are old and dirty, wipe them clean and apply new oil or grease.
- (2) For parts and points to apply oil and grease, refer to the exploded view of the 3.3 VHS MECHANISM ASSEMBLY. Fig.2-3-22 specifies oil and grease to be used.
- (3) When oiling, clean the objective parts with alcohol first and apply one or two drop(s) of oil. Too much oiling causes rotary parts to slip because of oil leakage.

Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-JB	AA
Oil	COSMO-HV56	BB

specifies oil and grease to be used

Fig.2-3-22

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